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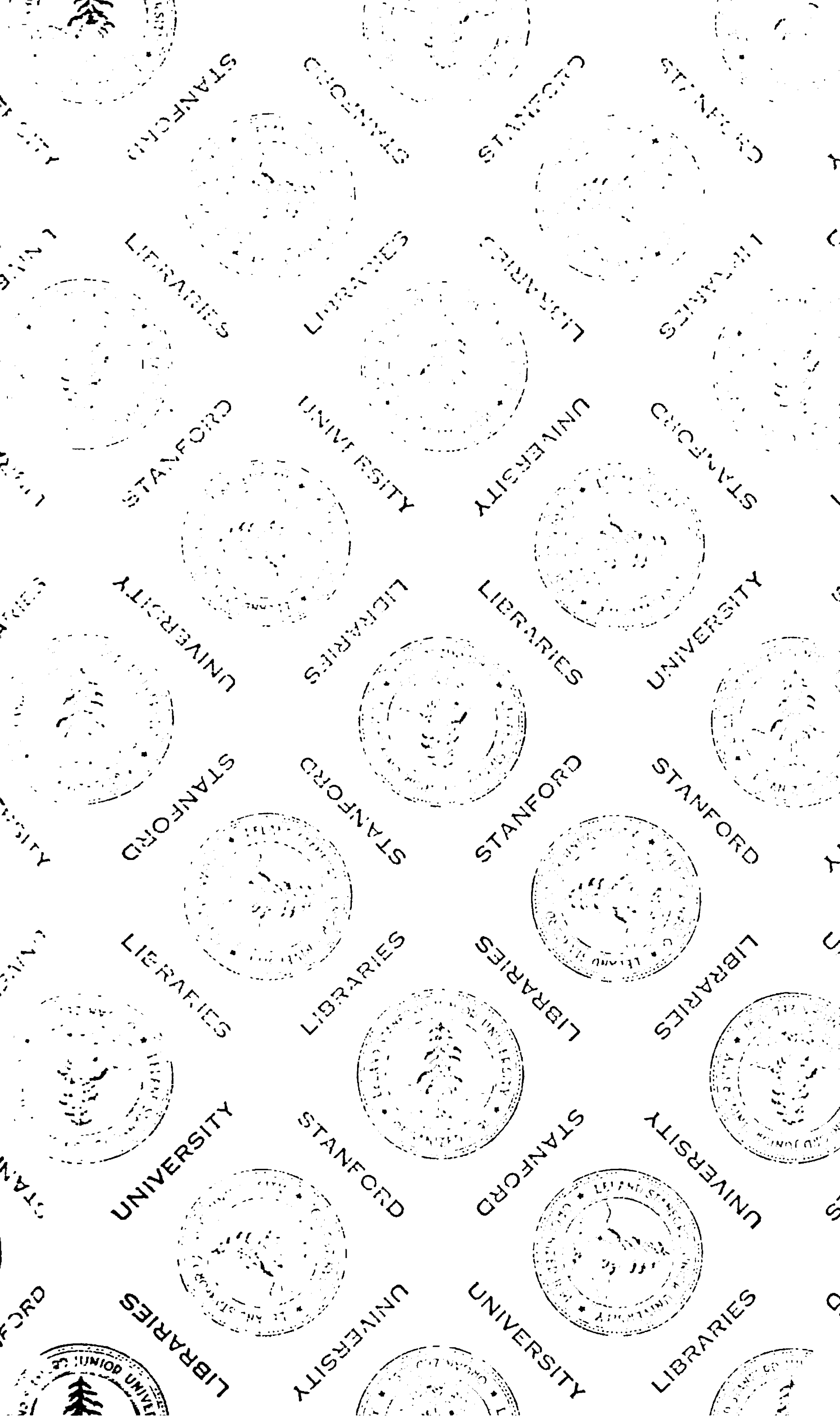
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MESSAGE

OF THE

PRESIDENT OF THE UNITED STATES,

AND

ACCOMPANYING DOCUMENTS,

TO THE

TWO HOUSES OF CONGRESS,

AT

THE COMMENCEMENT OF THE SECOND SESSION

OF

THE THIRTY-NINTH CONGRESS.

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WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1866.

86112



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# ANNUAL REPORT

OF

## THE SECRETARY OF WAR.

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WAR DEPARTMENT,  
*Washington City, November 14, 1866.*

MR. PRESIDENT : Disbandment of the volunteer forces in service at the time the rebel armies surrendered ; collecting the arms, ordnance, and military stores scattered over the vast theatre of war ; the sale and disposition of unserviceable material ; storing in arsenals, magazines, and depots that which might be used ; settling and adjusting war claims ; recruiting and organizing the regular army under the recent act ; the establishment of posts and garrisons on the frontier and in the Indian country ; testing the various improvements of breech-loading small arms, and supplying them to the army ; practical experiments to determine the destructive power of projectiles and the comparative resisting qualities of materials ; completing seaboard defences and providing them with armaments ; planning and carrying on harbor and river improvements ; these, with the administration of the laws relating to refugees, freedmen, and abandoned lands, have constituted the chief operations of the War Department during the past year.

The entire number of volunteer troops to be mustered out was, on May 1, 1865, 1,034,064, and my last annual report recounted the operation of disbanding this force until November 15, 1865, when 800,963 troops had been transported, mustered out, and paid. The work was actively continued after that date, and on January 20, 1866, 918,722 volunteers had been mustered out ; February 15, 952,452 ; March 10, 967,887 ; May 1, 986,782 ; June 30, 1,010,670 ; November 1, 1,023,021—leaving in service 11,043 volunteers, white and colored. The aggregate reduction of the colored troops during the year has been 75,024, and at this date one regiment of artillery and thirteen of infantry, numbering about 10,000 officers and enlisted men, remain in the service. Commenced in May, 1865, the work of discharging and returning to their homes 1,034,064 volunteers would have been completed within three months but for the necessity of retaining in service part of that force. Past experience shows that, should any national emergency require a larger force than is provided by the peace establishment, armies could be swiftly organized to at least the full strength of a million of men.

The reduction of the army has been attended by a corresponding reduction of material and retrenchment of expenditures. The advanced depots of the quartermaster's department, which had been established as bases of operations, have been broken up ; the greater part of the material sold at advantageous rates or

concentrated in five principal depots and arsenals ; and all unnecessary employes discharged. From May 1, 1865, to August 2, 1866, over 207,000 horses and mules were sold for \$15,269,075 54. About 4,400 barracks, hospitals, and other buildings have been sold during the year for \$447,873 14. The sale of irregular and damaged clothing in store produced during the fiscal year the sum of \$902,770 45. The fleet of 590 ocean transports in service on July 1, 1865, at a daily expense of \$82,400, was reduced before June 30, 1866, to 53 vessels, costing \$3,000 per diem, and most of these have since been discharged—ocean transportation being now almost entirely conducted by established commercial lines of steamers. Of 262 vessels which had been employed in inland transportation, at an expense of \$3,193,533 28, none were remaining in service on June 30, 1866; sales of river transports, steamers, and barges during the year are reported as amounting to \$1,152,895 92. The rates of wagon transportation in the Indian country have also been reduced by favorable contracts. The military railroads, which were operated during the war at a total expenditure of \$45,422,719 15, and which are officially reported to have reached an extent of 2,630½ miles, and to have possessed 433 engines and 6,605 cars, have all been transferred to companies or boards of public works, upon condition of the adoption of loyal organizations of directors. Cash sales of railroad equipment to the amount of \$3,466,739 33 are reported, and credit sales of \$7,444,073 22; upon the latter there have been paid, principal and interest, \$1,200,085 18; leaving due to the United States, on June 30, 1866, principal and interest, \$6,570,074 05. The military telegraph, which attained an extent of 15,389 miles of lines constructed during the period of hostilities, with a total expenditure of \$3,219,400 during the war, and \$567,637 during the last fiscal year, has been discontinued, the material sold and disposed of, and the employes discharged, only a few confidential operators being still retained for cipher correspondence with commanders of important districts.

Such subsistence stores as could not be retained for supplying the reduced army have for the most part been sold at satisfactory prices.

The sale of unserviceable and surplus stores pertaining to the signal corps has been effected; most of the officers have been mustered out; and the employes discharged.

All the temporary ordnance depots established during the war, with the exception of that at Hilton Head, where the work is in progress but not completed, have been discontinued, and the supplies have been sent to arsenals for storage, or, when not worth the cost of transportation, have been sold. The expenditures at arsenals have been greatly diminished, and their operations limited.

General hospitals, hospital transports and railroad trains, ambulance corps, and a number of medical purveying depots have been dispensed with, and all perishable articles of medicines and hospital supplies, in excess of the requirements of a peace establishment, have been disposed of by public sale at advantageous rates, and the reserved supplies concentrated at five depots. The proceeds of old or surplus medical and hospital property amount to \$4,044,261 59.

But the sale and disposition of these large amounts of unserviceable and perishable stores still leave on hand an adequate supply of war material to meet any emergency that can possibly arise. The stock of clothing, equipage, quartermaster, subsistence, hospital, and ordnance stores, arms, ammunition, and field artillery is sufficient for the immediate equipment of large armies. The disbanded troops stand ready to respond to the national call, and, with our vast means of transportation and rapid organization developed during the war, they can be organized, armed, equipped, and concentrated at whatever points military emergency may require. While, therefore, the war expenses have been reduced to the footing of a moderate and economical peace establishment, the national military strength remains unimpaired and in condition to be promptly put forth.

While the reduction of the volunteer force and the advantageous disposition or concentration of war material were thus successfully accomplished without diminishing the military power of the country, recruiting and reorganizing the regular army favorably progressed. In consequence of the difficulty in procuring enlistments for the regular while so many men were required for the volunteer service, 153 companies of the regular army, as then authorized, were unorganized on May 31, 1865, but in the middle of the following July these companies had been completed. Under the act of July 28, 1866, the regular army now comprises 10 regiments, or 120 companies, of cavalry, 5 regiments, or 60 companies, of artillery, and 45 regiments, or 450 companies, of infantry; of which 2 cavalry and 4 infantry regiments are composed of colored men, and 4 infantry regiments of men who were wounded in the line of their duty. One regiment of white cavalry had been fully recruited on September 15; the other regiment, assigned to the Pacific coast, is very nearly completed. 48 of the 54 companies required to convert into regiments the single battalions of the nine three-battalion regiments of the former organization have been completed and sent to their regiments. The 4 Veteran Reserve regiments have been assigned to districts where the men may be usefully employed in guarding storehouses and cemeteries, and on similar duties. The colored regiments will be recruited, as far as possible, from the colored volunteers still in service. The law authorizes an assignment of 100 privates to a company as the maximum, 50 being the minimum, and the maximum strength of the army is thus placed at 75,382, rank and file. The present strength of companies is fixed at 64 privates for cavalry, artillery, and infantry, and 122 privates for light batteries of artillery, making an aggregate strength of 54,302. As soon as the ranks shall be well filled, it is designed to increase the efficiency of the military force by raising the standard of qualifications.

The troops in service were regularly paid, and the demands of those discharged and mustered out promptly met. During the fiscal year ending June 30, 1866, \$10,431,004 42 were disbursed to the army and Military Academy, \$248,943,313 36 to volunteers; and in the disbursement of millions of dollars in small sums, and amid great difficulties and hazards, the total cost to the government, in expenses of every character, is but a fractional portion of one per cent.

Every effort has been made to promote the comfort and health of the army, and to give the best medical treatment to the wounded and sick. Well-grounded apprehensions of the appearance of Asiatic cholera as an epidemic, early in the present year, required prompt action for the protection of our troops. A rigid military quarantine was established on the southern Atlantic coast, and sanitary precautions enforced. The adoption of these measures availed to control or eradicate the disease, at the recruiting depots and forts where it appeared, before it assumed its usual alarming epidemic form; and official recognition has been given to the meritorious services of medical officers whose fidelity, energy, and skilful administration succeeded in averting or diminishing the horrors of widespread pestilence. In other respects the general health of the troops has been good. Among white troops the proportion of deaths, from all causes, to cases treated, has been one to every fifty-two. Among colored troops the proportion of cases taken sick has been greater than with the white troops, and the mortality rate one death to every twenty-nine cases treated. There were remaining in general hospitals, June 30, 1865, and admitted during the year, 64,438 patients, of whom, on June 30, 1866, only 97 remained under treatment. The comfort and proper medical treatment of the sick and wounded are secured in well-arranged post hospitals, of which there are at present 187, with a total capacity of 10,881 beds.

Measures have been adopted for the purpose of providing suitable shelter for the troops now stationed on the plains, and for those which may be ordered thither, and to prevent suffering during the winter. The army has been well supplied with forage, about one-half the quantity having been supplied from the stock remaining on hand at the cessation of hostilities; the consumption for the year has been 3,300,000 bushels of oats, 5,061,000 bushels of corn, 136,000 tons of hay, 2,700 tons of straw.

Subsistence stores of good quality have been supplied to the army, and though the larger part has been obtained at the principal market-centres of the northern States, yet the general return of the citizens, north and south, to the productiveness of peace, and the consequent reopening of the customary channels and sources of trade, have enabled a partial resumption of the course of procuring supplies at the points where they are to be consumed. Eighty-nine contracts for fresh beef have been made in the southern States, at a general average price of 11.06 cents per pound, and in the interior of those States other articles to a small extent have been purchased. The market at New Orleans is now so well furnished, and has so far resumed a healthful mercantile condition, as to render it possible to procure there, at satisfactory prices, most of the subsistence stores required in the department of the Gulf. On the Pacific coast, for several years after California was admitted to the Union, all the supplies for troops there stationed were required to be shipped from New York, but an ample and reliable market, comprising the products of California and Oregon, and the foreign countries bordering upon the same ocean, is now found in San Francisco, and most of the subsistence stores for troops in the division of the Pacific have been there obtained. In general the subsistence supplies purchased

during the year have been procured upon contracts, concluded in pursuance of advertisements for sealed proposals, written proposals, and acceptances.

The importance of speedily providing the army with breech-loading small-arms of the best pattern has been recognized and acted upon. By an order of January 3, 1866, a board of competent officers was convened for the purpose of examining, testing, and reporting on the various models of original breech-loaders, and the various plans for the conversion into breech-loaders of the arms heretofore borne by our troops. This board met on March 10, and continued in session until June 4, when its report was submitted, and directions have been given the ordnance department for the speedy manufacture of breech-loading arms. In view of the great number of small-arms on hand, it has been deemed advisable to convert Springfield rifle-muskets, at a comparatively small cost, into efficient breech-loaders, rather than to incur the cost of the entire manufacture of new arms of that description, at a time, too, when the invention may not have been perfected. This alteration of the Springfield musket has been effected so successfully as to render it an arm believed to be better in all respects than the Prussian needle-gun, while its metallic ammunition is regarded as superior to that of the latter. The department has already on hand breech-loaders of approved patterns adequate for the supply of the cavalry, and mounted and light infantry.

Besides the measures that have been mentioned to provide for the comfort and promote the efficiency of the army, stated monthly inspections have been made in every military command during the year, with a view to bring to notice, and promptly remedy, any irregularities and defects; and numerous special inspections have also been made throughout the whole country, for the purpose of correcting abuses, suggesting improvements, and effecting retrenchment in the service. The inspection service has not been changed by the return to peace; the system developed during the war, meeting the requirements as nearly as practicable, is still continued.

The present organization of military departments and divisions is as follows:

The department of the east, Major General George G. Meade to command, to embrace the New England States, New York, New Jersey, Pennsylvania, and Fort Delaware. Headquarters at Philadelphia.

The department of the lakes, Brigadier and Brevet Major General Joseph Hooker to command, to embrace the States of Ohio, Michigan, Indiana, Illinois, and Wisconsin. Headquarters at Detroit.

The department of Washington, Brigadier and Brevet Major General E. R. S. Canby to command, to embrace the District of Columbia, Alexandria and Fairfax counties, Virginia, and the States of Maryland and Delaware, except Fort Delaware. Headquarters at Washington.

The department of the Potomac, Brigadier and Brevet Major General John M. Schofield to command, to embrace the States of Virginia, except Alexandria and Fairfax counties, and West Virginia. Headquarters at Richmond.

The department of the south, Major General Daniel E. Sickles to command, to embrace the States of North and South Carolina. Headquarters at Charleston.

The department of the Tennessee, Major General George H. Thomas to com-



mand, to embrace the States of Kentucky, Tennessee, Georgia, Alabama, and Mississippi. Headquarters at Louisville.

The department of the Gulf, Major General Philip H. Sheridan to command, to embrace the States of Florida, Louisiana, and Texas. Headquarters at New Orleans.

The department of the Arkansas, Brigadier and Brevet Major General E. O. C. Ord to command, to embrace the State of Arkansas and Indian Territory west. Headquarters at Little Rock.

The department of the Missouri, Major General Winfield S. Hancock to command, to embrace the States of Missouri and Kansas, and the Territories of Colorado and New Mexico. Headquarters at Fort Leavenworth.

The department of the Platte, Brigadier and Brevet Major General Philip St. George Cooke to command, to embrace the State of Iowa, the Territories of Nebraska and Utah, so much of Dakota as lies west of the 104th meridian, and so much of Montana as lies contiguous to the new road from Fort Laramie to Virginia City, Montana. Headquarters at Omaha.

The department of Dakota, Brigadier and Brevet Major General A. H. Terry to command, to embrace the State of Minnesota and all the Territories of Dakota and Montana not embraced in the department of the Platte. Headquarters at Fort Snelling.

The department of California, Brigadier and Brevet Major General Irvin McDowell to command, to embrace the States of California and Nevada, and the Territory of Arizona. Headquarters at San Francisco.

The department of the Columbia, Major General Frederick Steele to command, to embrace the State of Oregon and the Territories of Washington and Idaho. Headquarters at Portland.

The principal movements of troops have been in Texas, on the Mexican frontier, and in the Territories, the details of which are given in the accompanying report of General Grant, commanding the armies of the United States, and the reports of division and department commanders, to which reference is made. General Grant reports that a military force has been kept in all the lately rebellious States for the purposes of insuring the execution of law, and protecting life and property against the acts of those who, as yet, will acknowledge no law but force—a class smaller, in his opinion, than could have been expected after such a conflict as that through which we have passed, but sufficiently formidable, to justify the course which has been pursued. Military movements have also been directed with a view to the protection of emigrants on their way to the mountain Territories against the hostility and opposition of the Indians.

Besides the operations thus recapitulated, of reduction, concentration, retrenchment, and reorganization of the military establishment, and payment, complete equipment, and disposition of the army, other matters of national importance and interest have received the careful attention of the War Department.

The permanent defences of the country have been strengthened. Their

efficiency has already been much increased by substituting cannon of larger calibre and improved model for lighter guns, and wrought-iron for wooden gun-carriages. This work is still in progress, and will be continued. Diligent and careful efforts, based upon the designs and recommendations of competent boards of engineers, have been made to adapt old works, as well as those in process of construction, to more powerful armaments. Construction has been suspended upon some works, in order to await the completion of important experiments having in view the extensive use of iron shields or armor for the protection of guns and gunners; the results already attained give the promise of a practical and highly beneficial application of the knowledge obtained by these trials.

Surveys of the lakes have been continued, and progress has already been made in improving the harbors and rivers of the country. The work will be energetically prosecuted under the liberal appropriations made at the last session of Congress.

Active and careful measures have been instituted for successfully and speedily carrying into effect the generous provisions of Congress for the benefit of surviving soldiers of the war for the Union. The subject of the payment of extra bounties to discharged soldiers, and extra pay to discharged officers, has received assiduous attention. The recent law devolving upon the War Department, instead of the accounting officers of the treasury, the duties of examination and settlement of claims of this nature, imposed a vast accumulation of labor, and required the consideration of numerous acts of Congress and the regulations and practice of several bureaus; upon the proper performance of these extraordinary labors depends the disbursement of nearly eighty millions of dollars among more than a million of claimants. Soon after the adjournment of Congress a competent board of officers was organized to prepare rules and regulations for the payment of the authorized bounties. Diligent application was given to the work, and the regulations, having been found to be in strict accordance with law, were promptly approved, published, and directed to be carried into effect. To the same board the subject of bounties for colored soldiers was also referred, with a view to provide any additional checks that might guard the bounty from fraudulent assignees and secure it to colored soldiers, and protect the treasury against fraud; and when the report was received, payment of the bounties was ordered. As to the other class of bounties, the Paymaster General regards it impracticable to make payment until all applications shall have been received, and claims classified and registered by States and organizations; but by this preliminary process the ultimate payment of all will, it is believed, be greatly expedited. Attempted otherwise, probably the work would never be fully accomplished. Of the valuable public records by which the validity of the bounty claims is to be tested, there is in the archives of the government but one copy, already much worn, for each period. An examination for each individual case would soon reduce them to illegible shreds.

The duty of the government to the soldiers who have been maimed or have fallen in its defence has not been neglected. Much care has been taken, by precautions and practical tests, to secure for the former the most durable, useful,

and comfortable artificial limbs. From July 16, 1862, the date of the act of Congress authorizing artificial limbs to be furnished, to July 1, 1866, there have been supplied to disabled soldiers 3,981 legs, 2,240 arms, 9 feet, 55 hands, 125 surgical apparatus, and it is supposed that not more than 1,000 limbs remain still to be supplied, at an estimated cost of \$70,000. In order to include unfortunate cases in which, from the nature of the injury or operation, no limb or other surgical appliance can be advantageously adopted, the Surgeon General has recommended that, if the appropriation for this purpose shall be continued, the money value of an artificial limb, in lieu of an order for the apparatus, be given to the maimed soldier. Forty-one national military cemeteries have been established, and into these had already been gathered, on June 30, the remains of 104,526 Union soldiers. The sites for ten additional cemeteries have been selected, and the work upon them, for some time delayed by the climate and a threatened epidemic, is now in course of vigorous prosecution. Although it may not be desirable to remove the remains of those now reposing in other suitable burial grounds, it is estimated that our national cemeteries will be required to receive and protect the remains of 249,397 patriotic soldiers whose lives were sacrificed in defence of our national existence. The average cost of the removals and reinterments already accomplished is reported at \$9 75, amounting in the aggregate to \$1,144,791; and it is believed that an additional expenditure of \$1,609,294 will be necessary. It is proposed, instead of the wooden headboards heretofore used, to erect at the graves small monuments of cast iron, suitably protected by zinc coating against rust. Six lists of the dead, containing 32,666 names, have been published by the Quartermaster General, and others will be issued as rapidly as they can be prepared.

Documents submitted by the chiefs of bureaus, and accompanying this report, contain detailed information relative to the operations of the War Department and the requirements of its respective branches.

The total estimate of military appropriations for the fiscal year ending June 30, 1868, is \$25,205,669 60.

The *Adjutant General's office* has immediate supervision of recruiting for the regular army, and disbanding the volunteer force, and charge also of the records and unfinished business of the Provost Marshal General's bureau, which, in accordance with act of July 28, 1866, was discontinued on August 28. Arrangements have been made for the prompt settlement of the undetermined questions formerly pertaining to that bureau, and for the removal to Washington of the records of its offices in the various States. The estimated appropriation required for the purposes of the Adjutant General's office is \$300,000.

The officers of the *Inspector General's department* are now those of the regular establishment, and they are all engaged in their legitimate duties of stated and special inspections. No appropriation is required for this service.

In the *bureau of military justice* during the past year 8,148 records of courts-martial and military commissions have been received, reviewed, and filed; 4,003 special reports made as to the regularity of judicial proceedings, the pardon of military offenders, the remission or commutation of sentences, and upon the

miscellaneous subjects and questions referred for the opinion of the bureau; including also letters of instruction upon military law and practice to judge advocates and reviewing officers. The number of records of military courts received at this bureau reached a minimum soon after the adoption of the recent army act, and since that time has increased with the military force. The other business of the office, as an advisory branch of the War Department, will also, it is believed, continue to be augmented until the peace establishment shall be completely organized and the new army fully recruited; and the fact that, in a large number of important cases, commanders of departments and armies are not authorized to execute sentences in time of peace, and that such cases can no longer be summarily disposed of without a reference to the Executive, will also require from the bureau a very considerable number of reports which heretofore have not been called for. Its aggregate business will, it is thought, not be reduced in proportion to the reduction of the military force.

In the *quartermaster's department* the returns and accounts of officers responsible for clothing and equipage during the year have been examined and transmitted to the treasury for final settlement. The erection of the fire-proof warehouse at Philadelphia, for which Congress made an appropriation on July 28, will be commenced so soon as the proposals now invited by public advertisement shall have been received and compared; and authority is desired for the purchase of a site and erection of a similar structure at Jeffersonville, Indiana. During the fiscal year ocean transportation has been furnished for 131,581 men; inland transportation for 1,016,300 persons, 138,389 animals, 10,370 wheeled vehicles, and 420,000 tons of stores of all kinds; and the greater part of the bills for transportation during the war have been settled and paid. Claims, principally under the act of July 4, 1864, have been filed during the year to the amount of over \$11,000,000, upon which about \$1,000,000 have been paid. No further appropriations are required for the regular service of the quartermaster's department, as it is believed that the balances now available, and the sums received and to be received, will suffice for the next fiscal year. For contingencies the sum of \$100,000 is requested.

The *subsistence department* is engaged, under the joint resolution of July 25, 1866, in paying, upon certificates given by the Commissary General of Prisoners, commutation of rations to those United States soldiers who were held as prisoners of war. Tobacco is now furnished to the enlisted men of the army, under proper regulations. The settlement of accounts of officers who have performed duty with the subsistence department has rapidly progressed. Claims under the act of July 4, 1864, which have been filed in the subsistence office, amount in the aggregate to \$1,758,031 04, on which \$85,343 10 have been allowed. Claims amounting to \$1,021,123 70 await final examination and decision. The total amount of money drawn from the treasury and disbursed by the subsistence department during the past fiscal year was \$7,518,872 54, including payment of claims under the act of July 4, 1864. The amount disbursed during the fiscal years of the war was:

From July 1, 1861, to June 30, 1862.....	\$48,799,521 14
From July 1, 1862, to June 30, 1863.....	69,537,582 78
From July 1, 1863, to June 30, 1864.....	98,666,918 50
From July 1, 1864, to June 30, 1865.....	144,782,969 41
From July 1, 1865, to June 30, 1866.....	7,518,872 54
Total amount.....	<u>369,305,864 37</u>

No appropriation is required for the next fiscal year.

Arrangements will soon be consummated by the *medical department* for the permanent security of its valuable mortuary records, including 16,000 folio volumes of hospital registers, 47,000 burial records, 16,000 hospital muster and pay rolls, alphabetical registers of the dead, containing 250,000 names of white and 20,000 of colored soldiers, and the pathological collection constituting the army medical museum. During the year official evidence, obtainable from no other source, of cause of death, or of discharge for disability, has been furnished in 49,212 cases, and 210,027 discharges upon certificates of disability have been examined and classified. The total number of surgical cases classified and recorded is, of wounds 133,952, and of operations 28,438. The preparation for publication of the medical and surgical history of the war has been prosecuted with energy, much of the manuscript and several of the illustrations for the first volume being completed. The army medical museum continues to increase in value and usefulness, and the greater security and additional accommodations of the building to which it will be shortly removed, admit of the addition of a great number of interesting and instructive specimens not hitherto available for want of space. A small appropriation will be required to continue the work of classification and preservation of this national collection. The number of casualties from the commencement of the war to the present time, in the regular and volunteer medical staff, is ascertained to be 336, including 29 killed in battle, 12 killed by accident, 10 died of wounds, 4 died in rebel prison, 7 died of yellow fever, 3 died of cholera, 270 died of other diseases. During the war 35 medical officers were wounded in battle. The distribution of troops in small bodies over so large an extent of country necessitates the employment of acting assistant surgeons temporarily, but the number of these has been reduced from 1,997 on July 1, 1865, to 264 on July 1, 1866, and will be still further diminished when existing vacancies in the grade of assistant surgeons, created by the act of Congress of July 28, 1866, are filled; a corresponding decrease in the number of hospital stewards, for general service, has also been effected; and in every branch of the department reduction and retrenchment have been rigidly enforced. An aggregate expenditure of \$267,391 92 was incurred by the medical department in furnishing officers and supplies to the bureau of refugees, freedmen and abandoned lands, which had under its control, during the fiscal year ending July 1, 1866, no appropriation applicable to the purpose; and though, under a decision of the Treasury Department, reimbursement was not made from subsequent appropriations for the freedmen's bureau, no embarrassment arose and no legislation is required. The funds at the disposal of the medical and hospital department, during the year ending June 30, 1866, were as follows:



# REPORT OF THE SECRETARY OF WAR.

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Balance of appropriations remaining in the treasury, July 1, 1865,	\$1, 161, 181 24
Amount of treasury draft No. 1,544, on war warrant 3,205, issued May 3, 1865, in favor of Assistant Surgeon J. B. Brinton, lost in the mail and subsequently refunded.....	10, 000 00
Proceeds of sales of old or surplus medical and hospital property,	4, 044, 261 59
Amount refunded on account of supplies furnished for the use of prisoners of war.....	22, 163 34
Amount refunded by the subsistence department, being apportionment of amount paid for board and care of sick soldiers in private hospitals.....	121, 600 51
Amount received for board of officers in hospitals.....	14, 298 96
Amount recovered on account of stores and furniture lost or damaged in transportation.....	4, 597 42
Refunded from appropriation for care of destitute discharged soldiers, being for board of discharged soldiers, while having artificial limbs fitted.....	6, 955 24
Received from all other sources.....	1, 005 94
<b>Total.....</b>	<b>5, 386, 064 24</b>

Of this amount there was disbursed during the same period—	
For medical and hospital supplies, (a great part of this sum expended in payment of debt of previous year).....	\$975, 773 83
For pay of private physicians.....	926, 584 05
For pay of nurses and other hospital employes.....	309, 916 06
For purchase of artificial limbs for disabled soldiers.....	198, 999 00
For board of sick soldiers in private hospitals.....	58, 781 75
For expenses of hospitals for officers.....	23, 158 51
For expenses of purveying depots, laboratories, repairs, &c..	312, 243 18
For miscellaneous expenses of the medical department.....	32, 345 39

Total disbursements during the fiscal year.....	2, 837, 801 77
Balance in treasury, June 30, 1866.....	2, 546, 457 14
Refunded of amount advanced by disbursing officers during the previous year.....	1, 805 33
	<b>5, 386, 064 24</b>

The estimated appropriation required for the medical department for the next fiscal year is \$90,000.

The *pay department* remains without material change. In consequence of additional labors imposed upon this branch of the War Department by recent congressional enactment, and in order to promptly pay the large issue of treasury certificates, it was necessary to retain temporarily a number of additional paymasters. The financial summary exhibits—

A balance on hand at the beginning of the fiscal year....	\$120, 106, 999 32
Received from treasury and other sources during the year..	163, 426, 228 97
<b>Total.....</b>	<b>283, 533, 228 29</b>

Accounted for as follows:

Disbursements to army and Military

Academy.....	\$10,431,004 42	
Disbursements to volunteers.....	248,943,313 36	
Unissued requisitions in treasury .....	10,750,000 00	
In hands of paymasters June 30.....	13,408,910 51	
	<hr/>	283,533,228 29
		<hr/>

The total disbursements of each class during the fiscal year is as follows :

To troops on muster out .....	\$205,272,324 00
To troops in service.....	30,250,010 00
To referred claims.....	7,662,736 00
To payment of treasury certificates.....	16,189,247 00
	<hr/>
	259,374,317 00
	<hr/>

The estimated appropriations of the pay department amount to \$17,728,560 60 for pay of the army for the next fiscal year.

The *corps of engineers* at the close of the fiscal year consisted of ninety-five officers, the battalion of engineer troops, and the Military Academy. Thirteen officers were on detached duty, serving in command of military departments, on special service connected with the levees of the Mississippi river, on the Light-house Board, with the Department of the Interior upon duties relating to the Pacific railroad, on military surveys and staffs of the general-in-chief and commanding general of the military division of the Gulf; the remainder were diligently engaged in the duties of their profession, officers of desirable experience and practice having direct supervision of the more important works. The engineer troops were distributed between the Military Academy and the two depots of engineer supplies located at Willett's Point, New York, and at Jefferson Barracks, Missouri. The condition of the battalion with regard to discipline and instruction is reported as satisfactory. At the two engineer depots, much valuable war material has been collected from points where it had remained after the close of active operations in the field, and it is proposed to keep on hand a complete outfit on a moderate scale of such engineer, bridge, and siege equipage as would be most likely to come into requisition to supply unforeseen demands in the field. The chief of engineers suggests a modification of the act of June 23, 1866, in respect to the manner of procuring labor and material for improvements of harbors and rivers. The estimated appropriation required by the engineer bureau for the next fiscal year is \$5,140,000.

The *ordnance department* now limits the operations at arsenals to the construction of wrought-iron sea-coast carriages, and such ordnance supplies as are needed for immediate use; preservation of the ordnance stores left on hand at the close of the war; breaking up unserviceable ammunition; and completing unfinished buildings. Fire-proof workshops have been completed at Watervliet, Frankford, and Allegheny arsenals; three magazines, with a capacity for storing 15,000 barrels of gunpowder, have been built at St. Louis arsenal, and

one of the same capacity at each of the arsenals at Washington City and Benicia. A board of officers is engaged in examining suitable sites for depositories of gunpowder, provided for by an appropriation of the last session of Congress; and the erection of such magazines as will furnish secure and suitable storage for all our powder, ammunition, and nitre will be commenced early next spring. The arsenals at the south which were seized by the rebels, having been retaken, are reoccupied, excepting the North Carolina arsenal, which was destroyed, the Harper's Ferry armory, the workshops of which were burned, and which has been used as an ordnance depot, the arsenal in Florida, which has been transferred temporarily to the freedmen's bureau, and the arsenal in Arkansas, which is occupied by troops of the line. The Chief of Ordnance is of opinion that it is not advisable to rebuild the North Carolina arsenal, or to re-establish the armory at Harper's Ferry, and the sale of both is recommended. All the small-arms and some of the other supplies which were collected at Baton Rouge, San Antonio, Augusta, Charleston, and Mount Vernon arsenals have been removed, and the only supplies which have been sent to them were such as were required for immediate issue to troops. The commission appointed under the act of April 19, 1864, to examine and report the value of property on Rock Island taken by the United States, by authority of that act, has entered upon its duties. As soon as good titles to the property shall have been acquired, the construction of the armory and arsenal, as required by law, will be hastened as fast as the appropriations will admit. It is important that this establishment should be built up as rapidly as possible, and a considerable sum has been estimated for that purpose during the next fiscal year. It is believed that all of it is necessary and can be judiciously and advantageously expended. The operations at the national armory at Springfield, Massachusetts, during the past year have been confined to cleaning and repairing arms used during the war, and to making the requisite preparations for converting the Springfield muskets into breech-loaders. The power and endurance of the 8-inch and 12-inch cast-iron rifle cannon have been subjected to practical tests, and the experiments will be continued. The ordnance returns for three consecutive years, including a period of active service and ordinary repairs, show an average duration of five years for cavalry carbines, of four years for cavalry pistols, sabres, and accoutrements, of seven years for infantry muskets, and of six years for infantry accoutrements. From January 1, 1861, to June 30, 1866, the ordnance department provided 7,892 cannon; 11,787 artillery carriages; 4,022,120 small-arms; 2,362,546 complete sets of accoutrements for infantry and cavalry; 539,544 complete sets of cavalry horse equipments; 28,164 sets of horse artillery harness; 1,022,176,474 cartridges for small-arms; 1,220,555,435 percussion caps; 2,862,177 rounds of fixed artillery ammunition; 14,507,682 cannon primers and fuzes; 12,875,294 pounds of artillery projectiles; 26,440,054 pounds of gunpowder; 6,395,152 pounds of nitre, and 90,416,295 pounds of lead. In addition to these, there were immense quantities of parts provided for repairing and making good articles damaged, lost, or destroyed in the service. The fiscal resources of the ordnance bureau for the year amounted to \$35,301,062 56, and the expenditures

\$16,551,677 58, leaving a balance of \$18,749,385 18, of which \$18,043,804 28 were undrawn balances in the treasury, and \$705,580 90 were to the credit of disbursing officers in the government depositories on June 30, 1866. The estimated appropriation required by the ordnance office, including only such objects as require early attention, is \$1,593,242.

In the *office of the Commissary General of Prisoners* a reduced force has been engaged in receiving and completing the records relating to prisoners of war, in furnishing information required by the various bureaus, and in the investigation of claims for commutation of rations to United States soldiers while held as prisoners of war.

The clerical force at the office of the *signal corps* is employed in arranging and putting in durable form messages and reports which passed through or emanated from the corps during the war. The expenditures for the signal service during the year ending September 30, 1866, were \$3,900 15; the total amount appropriated and still available for signal service September 30, 1866, was \$252,565 97. No appropriation was requested of last Congress, and none will be required for the next fiscal year.

At the last examination the corps of cadets at the *Military Academy* numbered two hundred and twenty-eight members, and forty cadets of the graduating class completed the course of studies and were commissioned lieutenants in the army. Under the provisions of the acts of Congress approved, respectively, July 13 and 28, 1866, the Military Academy was separated from the corps of engineers, which, together with certain professors and cadets, had heretofore constituted the institution, and the officers of which had exercised exclusive supervision and control over it. Brevet Major General Edmund Schriver, Inspector General, has been assigned as Inspector, and Colonel T. G. Pitcher, of the 44th Infantry, appointed Superintendent. The report of the Board of Visitors for 1867 bears ample testimony to the usefulness and excellent condition of the academy, and recommends the increase of the number of cadets to 400. With the present number of cadets but one graduate can be supplied to each regiment every second year, after the ordinary demands of the staff corps are met. During the past session of Congress important measures were adopted respecting the academy, raising the standard of qualifications for admission, and requiring that appointments be hereafter made one year in advance of the date of admission. The inspector, from personal observation, reports the authorities of the institution as most assiduous in their efforts to advance the interests of the academy and its cadets. Its administration is characterized by economy, and habits of frugality are inculcated. Excellent discipline is maintained and judiciously enforced. The estimated appropriation for the Military Academy is \$243,867.

In the *bureau of refugees, freedmen and abandoned lands* the Commissioner reports that there is no material change of organization, but business is facilitated and vexed questions settled by the law of 1866. The jurisdiction of assistant commissioners coincides generally with department and district commands, but is distinct in Maryland and the District of Columbia. Under the new law Maryland and Kentucky are embraced, and these States seem to require aid from the bureau in promoting the interests of justice and education.

In the northern cities employment offices, of little expense to the government, and not a source of revenue, have been established with a view to obtain work and homes for dependent freed people and to relieve crowded localities. The importance of self-support has been urged by proper means upon the laboring classes. Wages have been determined not by orders of bureau officers, but by circumstances ordinarily affecting the price of labor in different localities. The education of freedmen and refugees has been carried on vigorously, under the immediate patronage of benevolent societies. A superintendent of education, devoting his whole time to his work, is stationed at the bureau headquarters in each State, and all bureau officers co-operate with him. It is estimated that 150,000 freedmen and their children are now attending school in the southern States. Schools for refugee white children are also established. Their formation is everywhere encouraged by the bureau. There has been but little uniformity of action in different States in respect to the administration of justice. Assistant commissioners have been instructed to transfer military jurisdiction as rapidly as possible to State judicial tribunals. This has been done completely in some States, while in Virginia, Louisiana, and Texas bureau courts are still in existence. A claim division, instituted in March last, and aided by officers and agents throughout the States, has sought to prevent frauds upon colored soldiers in their efforts to collect unpaid claims. 195 claims were paid through the office of the Commissioner; 723 rejected at his office; 1,532 are in process of adjustment. The aggregate amount collected and paid is \$10,539 09. Detailed reports are given of the operations of the bureau in each State and the District of Columbia. Transportation is reported as furnished to 6,352 destitute freed people and 387 refugees. 13,412,273 rations were issued between June 1, 1865, and September 1, 1866. The average number per month, to refugees and freedmen, was 894,569; the average number per day, 29,819. The issue to whites increased until June 30, 1866, when issues to freedmen and refugees were about equal. From June 30, 1866, until September 1, the number supported of both classes has diminished. Rigid scrutiny has been exercised to prevent issues to any but the absolutely destitute, and parts of the ration not actually needed were cut off. Officers were directed to hold each plantation, county, parish, and town responsible for the care of its own poor, but to very little purpose, for, with few exceptions, the State authorities have failed to contribute to the relief of the class of persons supported by the government. Owing to the failure of crops the requirements of circular 10, of August 22, could not be rigidly enforced. Upon the application of State officials, special issues are being made to certain States for the support of their pauper population. Rations are sold to teachers and agents of benevolent societies, under the same rules that apply to such purchases made by commissioned officers. Bureau hospitals receive the usual freedmen's ration. The amount of land now in possession of the bureau is 272,231 acres, to be increased by 228 tracts in Tennessee, of which the number of acres has not been reported. The aggregate number of parcels of town property, not included in the above, which have been in possession of the bureau is 3,724, of which 2,605 have been restored, leaving a balance of 1,119 parcels of town property.



The balance on hand of the freedmen fund is.....	\$282, 383 52
The balance of district destitute fund.....	18, 338 67
The balance of appropriation.....	6, 856, 259 30
	<hr/>
	7, 156, 981 49

The estimated amount due subsistence department is.....	\$297, 000 00
The transportation reported unpaid.....	26, 015 94
The transportation estimated due.....	20, 000 00
Estimated amount due medical department.....	100, 000 00
Estimated amount due quartermaster department.....	200, 000 00
	<hr/>
	643, 015 94
Total balance for all purposes of expenditure.....	<hr/> <hr/> 6, 513, 965 55

The Commissioner estimates the additional funds necessary for the next fiscal year as follows :

Salaries of assistant commissioners, sub-assistants, and agents.	\$147, 500 00
Salaries of clerks.....	82, 800 00
Stationery and printing.....	63, 000 00
Quarters and fuel.....	200, 000 00
Subsistence stores.....	1, 500, 000 00
Medical department.....	500, 000 00
Transportation.....	800, 000 00
School superintendents.....	25, 000 00
Buildings for schools and asylums, (including construction, rental, and repairs).....	500, 000 00
Telegraphing and postage.....	18, 000 00
Total.....	<hr/> <hr/> 3, 836, 300 00

In compliance with recent enactments of Congress, commissioners to assess the value of slaves enlisted into the United States army during the war have been appointed for Missouri, Maryland, Kentucky, and Tennessee, but their reports have not yet been received.

In conclusion, it gives me pleasure to again express my obligations to the chiefs of bureaus and their subordinates, who, in reducing the War Department to a peace establishment, have evinced the same diligence, ability, and fidelity to the interests of the government that distinguished them during the labors, anxiety, and vicissitudes of the war, and contributed so much to its successful termination.

EDWIN M. STANTON,  
*Secretary of War.*

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APPENDIX.

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P A P E R S

ACCOMPANYING

REPORT OF THE SECRETARY OF WAR.

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1866.

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# REPORT

## OF

### GENERAL U. S. GRANT, COMMANDING ARMY.

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HEADQUARTERS ARMIES OF THE UNITED STATES,  
*Washington, November 21, 1866.*

SIR: Since my report for 1865, the volunteer force then in service has been almost entirely replaced by the regular army, mostly organized under the act of Congress, approved 28th July, 1866. The report of the Adjutant General of the army gives exact statistics on this subject.

Passing from civil war of the magnitude of that in which the United States has been engaged to government through the courts, it has been deemed necessary to keep a military force in all the lately rebellious States, to insure the execution of law, and to protect life and property against the acts of those who, as yet, will acknowledge no law but force. This class has proven to be much smaller than could have been expected after such a conflict. It has, however, been sufficiently formidable to justify the course which has been pursued. On the whole, the condition of the States that were in rebellion against the government may be regarded as good enough to warrant the hope that but a short time will intervene before the bulk of the troops now occupying them can be sent to our growing territories, where they are so much needed.

I respectfully refer you to the reports of Generals Sherman, Halleck, Meade, Sheridan, Thomas, Sickles, McDowell, Pope, and Steele, herewith, for full information of the condition of the States and Territories under their command. The last of these reports is but this moment received. The time has passed when they should be in the hands of the printer to prepare them for presentation to Congress on its assembling. To make a full report I would have to get my facts from these reports. Time not permitting, I beg to refer to them in lieu of their condensation by me.

With the expiration of the rebellion, Indian hostilities have diminished. With a frontier constantly extending and encroaching upon the hunting-grounds of the Indian, hostilities, opposition at least, frequently occur. To meet this, and to protect the emigrant on his way to the mountain territories, troops have been distributed to give the best protection with the means at hand. Few places are occupied by more than two, and many by but a single company. These troops are generally badly sheltered, and are supplied at great cost. During the past summer inspections were made by Generals Sherman, Pope, Ingalls, Sackett, and Babcock, to determine the proper places to occupy to give the best protection to travel and settlements, and to determine the most economical method of furnishing supplies. The labor of putting up temporary quarters is performed by the troops intending to occupy them. In the course of the next season more permanent buildings will have to be erected, however, which will entail an expense for material at least. I would respectfully suggest, therefore, that an appropriation for this special purpose be asked.

The permanent peace establishment being much larger than has been hereto-

fore provided for, an appropriation for building barracks, storehouses, &c., to meet present wants, seems to be required. The reports of the heads of the staff departments of the army, particularly that of the Quartermaster General, may cover this point.

I would respectfully suggest for the consideration of Congress the propriety of transferring the Indian bureau from the Interior to the War Department, and the abolition of Indian agencies, with the exception of a limited number of inspectors. The reason for this change seems to me both obvious and satisfactory. It would result in greater economy of expenditure, and, as I think, diminution of conflict between the Indian and white races.

I have the honor to be, very respectfully, your obedient servant,

U. S. GRANT, *General*.

Hon. E. M. STANTON,  
*Secretary of War.*

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*Schedule of reports of military operations accompanying the report of General Grant, for 1866.*

Report of Lieutenant General W. T. Sherman, commanding military division of the Missouri, dated November 5, 1866, of the operations of the troops under his command during the past year, and forwarding report of Major General John Pope.

Report of Major General H. W. Halleck, commanding military division of the Pacific, transmitting the reports of Major General I. McDowell, commanding department of California, dated October 18, 1866, and Major General F. Steele, commanding department of the Columbia, dated October, 1866, of the military operations in their respective departments during the past year.

Report of Major General George G. Meade, commanding department of the east, dated October 12, 1866, of military operations in his command during the present year.

Report of Major General P. H. Sheridan, commanding department of the Gulf, dated November 14, 1866, of operations since May 29, 1865.

Reports of Brevet Major General T. J. Wood, commanding district of Mississippi, and Brevet Major General Jefferson C. Davis, commanding district of Kentucky, of the military operations in their respective commands, forwarded by Major General George H. Thomas, commanding department of the Tennessee.

Report of Major General D. E. Sickles, commanding department of the south, of date October 30, 1866, of military operations and general condition of affairs during the present year.

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REPORT OF LIEUTENANT GENERAL W. T. SHERMAN.

HEADQUARTERS MILITARY DIVISION OF THE MISSOURI,  
*St. Louis, Missouri, November 5, 1866.*

GENERAL: On my return from a two months' tour on the plains, I had the honor to receive the letter from your headquarters of October 3, 1866, calling for a report of the operations of the troops of my command during the past year. Having in the mean time been called to Washington, and now again being under orders that will compel my departure to-morrow, I am forced to slight the task.

Upon the close of the great war of the rebellion, June 27, 1865, the whole territory of the United States was divided into five great military divisions, of

which that styled the military division of the Mississippi fell to my share. It was composed of the department of the Ohio, Major General Ord commanding; the department of the Missouri, Major General Pope commanding, and the department of Arkansas, Major General J. J. Reynolds commanding. The first business that demanded our attention was the disbandment of the vast armies that had been formed in the war, and the reduction of the depots of accumulated stores. This progressed with great rapidity under the orders of the War Department; but still, on the 31st of October, 1865, there remained in service 1,487 commissioned officers, and 25,487 enlisted men. They were composed of a small proportion of the old army, and of volunteers who had been enlisted for the war and who claimed their discharge; but they were stationed in remote districts where they could not be replaced during the winter season, and we had no regular troops available for the purpose. Still the reduction of all irregular troops was pushed as fast as the season would permit, even at the risk of public property; so that by the 31st of October, 1866, the aggregate troops in the military division was reported 578 commissioned officers and 13,953 enlisted men.

By general orders of the War Department of August 6, 1866, an entire change in the territorial commands was made. This military division became that of the Missouri. The department of the Ohio was taken out entirely, and the territory lying west of the Mississippi and east of the Rocky mountains was divided into four departments, viz: department of Dakota, Major General Terry commanding; department of the Platte, Major General Cooke commanding; department of the Missouri, Major General Hancock commanding, and department of the Arkansas, Major General Ord commanding. This remains the case at this time, and as all irregular troops have been discharged, I have distributed the regular troops as follows:

Department of Dakota: the tenth, thirteenth, twenty-second, and thirty-first regiments of infantry, and two hundred Indian scouts.

Department of the Platte: battery C, third artillery, second regiment cavalry, the eighteenth, twenty-seventh, and thirty-sixth regiments of infantry, and two hundred Indian scouts.

Department of the Missouri: battery B, fourth artillery, third and seventh regiments of cavalry, eight companies tenth cavalry (colored,) the third, fifth, thirty-seventh, thirty-eighth (colored) regiments of infantry, and one hundred and fifty Indian scouts.

Department of the Arkansas: battery B, fifth artillery, four companies tenth cavalry (colored,) nineteenth and twenty-eighth regiments of infantry, and fifty Indian scouts.

This distribution of troops was made rather with a view to the future than to the immediate condition of affairs, and when these regiments are fully organized, armed, and instructed, I think they will secure the general peace and security of the country, and of the national interests intrusted to my keeping. The act of Congress providing the new military peace establishment passed at so late a date that we could hardly expect the new troops to be ready this year; but as much progress has been made in the enlistment and organization of the new regiments as could have been expected.

In order to an understanding of the great military problem to be solved, I must state in general terms that this military division embraces the vast region from the Mississippi river to the Rocky mountains, of an average breadth (east and west) of one thousand three hundred and fifty miles, and length (north and south) of over one thousand miles, viz: from the south border of New Mexico to the British line. On the east are the fertile and rapidly improving States of Minnesota, Iowa, Missouri, and Arkansas. Immediately on the west are the Territories and States of Dakota, Nebraska, Kansas, and the Indian territory. The land on this eastern border is fertile and well adapted to settlement; but their

western parts are a vast prairie, with good grasses, but generally devoid of trees or minerals, are subject to droughts, and are not inviting to settlers. Next in order are the mountainous Territories of Montana, Utah, Colorado, and New Mexico, composed of high plateaus and mountains, containing minerals of every kind, with forests of timber and numerous valleys susceptible of high cultivation, either by means of the ordinary rains, or the more certain system of irrigation that has been begun within a comparatively recent period, and has been pushed with an energy and success that promises the best results. These new and mountain Territories present a most interesting feature in our future development as a nation, and are in my judgment worthy the liberal and fostering care of the general government. Between these mountain Territories and those of the river border lie the great plains of America, which have been well mapped and described by the hundreds of explorers that have traversed them from the time of the expeditions of Pike, and Lewis and Clark, as early as 1803, until the present moment. These plains can never be cultivated like Illinois, never be filled with inhabitants capable of self-government and self-defence as against Indians and marauders, but at best can become a vast pasture-field, open and free to all for the rearing of herds of horses, mules, cattle, and sheep. The mountain Territories seem to be more rapidly improving and assuming a condition of self protection and defence, because the people can acquire fixed habitations and their property is generally grouped in valleys of some extent, or in localities of mines capable of sustaining a people strong enough to guard themselves against the predatory bands of nomadic Indians. Still they occupy at this time an isolated position, presenting a thinly settled frontier in every direction, with a restless people branching out in search of a better place, or of better mines. To defend them perfectly is an utter impossibility, and all we can do is to aid the people in self-defence, until in time they can take care of themselves, and to make the roads by which they travel or bring their stores from the older parts of our country as safe as the case admits of.

This brings me to the consideration of the question of the Indians, who, in nomadic and predatory bands, infest the whole country described, sometimes in one place and then in another. These Indians are universally, by the people of our frontier and of our isolated Territories, regarded as hostile, and we, the military, charged with a general protection of the infant settlements and long routes of travel, have to dispose our troops and act as though they were hostile; while by the laws of Congress, and the acts of our executive authorities, these Indians are construed as under the guardianship and protection of the general government, through civilian agents. This whole subject has heretofore been so ably reported on by General Pope and others, well qualified to judge, that I will not here renew the discussion, but merely state as the result of my own judgment that the entire management of the Indians should be controlled by the military authorities, and that the commanding officers of the troops should have not only the surveillance of these Indians, but should supervise and control the disbursement of moneys and distribution of presents to the tribes under past and future treaties. Indians do not read, and only know of our power and strength by what they see, and they always look to the man who commands soldiers as the representative of our government. The complaints of short payment by the agents are universal, and the Indians themselves would be more likely to receive the ample annuities appropriated by Congress if the agents were required to make the semi-annual payments subject to the inspection and control of the military commanders, who, as a rule, are not so liable to be corrupted by the chances of gain and speculation as temporary appointees.

The Indians who have heretofore been located on reservations, such as the Wyandotts, Shawnees, Pottawatomies, Pawnees, Cherokees, Choctaws, Creeks, &c., &c., have given little or no trouble the last year, and do not come within our supervision more than our own people. But the wandering Sioux, who rove



from Minnesota to Montana, and down as far as the Arkansas, have done acts of predatory hostility almost impossible to foresee or to prevent. In like manner the Arapahoes and Cheyennes, Kiowas, Comanches and Apaches, Navajoes and Utes, though supposed to be restricted to reservations, will not settle down, but they roam, according to their habits, over the vast plains, and they too have done acts of hostility, though the old men and chiefs of the tribes deny the acts altogether, or charge them on their young men, who, when absent on the hunt, are beyond their control.

I propose the coming year, (with your consent, and with that of the Secretary of the Interior, in whose control these Indians are supposed to be,) to restrict the Sioux north of the Platte, west of the Missouri river, and east of the new road to Montana which starts from Laramie for Virginia City by way of Forts Reno, Philip, Kearney, C. F. Smith, &c. All Sioux found outside of these limits without a written pass from some military commander defining clearly their object, should be dealt with summarily. In like manner I would restrict the Arapahoes, Cheyennes, Comanches, Kiowas, Apaches, and Navajoes south of the Arkansas and east of Fort Union. This would leave for our people exclusively the use of the wide belt, east and west, between the Platte and the Arkansas, in which lie the two great railroads, and over which passes the bulk of travel to the mountain Territories. As long as these Indians can hunt the buffalo and antelope within the described limits we will have the depredations of last summer, and worse yet, the exaggerations of danger raised by our own people, often for a very base purpose. It is our duty, and it shall be my study, to make the progress of construction of the great Pacific railways that lay in this belt of country as safe as possible, as also to protect the stage and telegraph lines against any hostile bands, but they are so long that to guard them perfectly is an impossibility, unless we can restrict the Indians as herein stated. I beg you will submit this proposition to the honorable Secretary of the Interior, that we may know that we do not violate some one of the solemn treaties made with these Indians, who are very captious, and claim to the very letter the execution on our part of those treaties, the obligation of which they seem to comprehend perfectly.

In the department of Dakota I propose that General Terry shall make the Missouri river as safe to boats as possible, and that he shall open and protect the new route from Minnesota to Montana, and afford the stages and wagons that travel that long and exposed route all the assistance in his power.

In the department of the Platte I propose that General Cooke shall continue to cover the building and engineering operations of the Pacific railway that is under construction up the Platte, and has accomplished two hundred and seventy-five miles of road, substantially, this year; that he shall next year complete the wagon road from Fort Laramie to Virginia City, which the Indians give notice they will resist. They represent it as passing through the only remaining hunting grounds they have; but this road is necessary to Montana, and must be finished and made safe. It is on this road that we have encountered most trouble this year, and the Indians have killed Lieutenant Daniels, 18th infantry, twenty-four soldiers, and about twenty citizens connected with trains. All these deaths must be avenged next year. By reason of the discharge of all volunteers, and the late period at which we were provided a regular army, we were too weak to attempt it this year, and must do so the next.

In the department of the Missouri General Hancock is charged with the protection of the Smoky Hill and Arkansas routes, and of the exposed settlements of Colorado and New Mexico. This is a most difficult problem. He will, of course, continue to give every assistance to the construction of the Union Pacific railway, now done to Fort Riley, and under contract for two hundred and fifty miles beyond; and he will do all that is possible to encourage and protect the settlements on the tributaries of the Upper Arkansas and along



the eastern base of the Rocky mountains. These are most important in a military sense, and they hold out the promise of a country that can now partially, and will soon be able to feed the men and horses needed in that hitherto desolate region at reasonable prices. Denver is already an important city, and the valleys of the Cache-la-Poudre, Thompson's creek, Boulder, Fontaine-qui-buille, Huerfano and Purgatoire already present beautiful farms, and will, with some assistance and protection, soon be able to defend themselves as against any band of Indians likely to threaten them. But from all I can learn, New Mexico does not hold out the same hopes. It has been settled longer than Ohio, and yet remains poor and exposed, with but a thin line of fields along the banks of the Rio Grande, liable at all times to be swept by the inroads of the nomad Indians that surround it. The whole Territory seems a pastoral land, but not fit for cultivation. The mines undeveloped are supposed to be very valuable, but as yet remain mostly in a state of nature. We have held this Territory since 1846, twenty years, at a cost to the national treasury of full a hundred millions of dollars, and I doubt if it will ever reimburse to the country a tithe of that sum. The entire population may be assumed at a hundred thousand, and the minimum force required there will not fall much short of two thousand five hundred men, which should be mostly of cavalry. Much of the very food consumed by men and horses has to be hauled over a thousand miles, at a cost of fifteen cents a pound, and the cost of every man will average a thousand dollars a year. General Carleton, who commands there, is thoroughly conversant with all its history and interests, and seems alive to his obligations to the general government. With the consent of the War Department he has collected as prisoners of war the hostile Navajoes and Apaches to the number of 8,793 men, women, and children, on a reservation forty miles square, at the Bosque Redondo, (Fort Sumner;) and General Haines, my chief commissary, reports the cost of feeding them alone at from \$60,000 to \$70,000 a month. This is done on the supposition that it costs less to feed than fight them. In this connection I send herewith a most full and complete report by General Carleton, of date October 17, 1866, called for by me during my recent tour. I invite your special attention to the papers indorsed by him, giving the abstract of the Indian scouts for the years 1863 and 1864; and I infer these fights have been much less frequent since he has collected the hostile Indians on the reserve. You will observe, also, that his calculation is that the Indians will soon be self-supporting. I hope so, for surely we cannot afford to feed them at the present rate without asking a special appropriation of Congress. I also here subjoin the most valuable and comprehensive report of General Pope on the same matters, of date August 13, 1866, and think that his views are entitled to very great weight and consideration. I think these Navajoes and Apaches, the Cheyennes and Arapahoes, with the Kiowas, could probably be got to reservations near the Cherokees and Choctaws; but between them and the Utes and the Sioux there is a traditional hereditary war that cannot be reconciled in one generation. They will not live together; and, indeed, while by feeding the Indians we may keep some quiet, others will be as hard to keep to their reservations as the wild buffaloes. After the next year's experience, I hope to be able to advise some more specific measures than are embraced herein.

In the department of Arkansas, General J. J. Reynolds has managed matters so quietly and so skilfully that we have had not a particle of trouble. In matters connected with the freed negroes, he was admirably seconded by the commissioner, General Sprague, a most accomplished soldier and gentleman. I feel assured that General Ord, who has recently succeeded General Reynolds, will continue in that department to maintain absolute peace, and that plenty and prosperity will soon repay the labors of the industrious inhabitants. The Indians to the west of Arkansas are reported as more nearly approaching civili-

zation than any Indians ever did on this continent. It is worthy an effort on our part to endeavor to spread their influence, and to attract to the same quarter all of the Plain Indians that can be induced to remove there, and by contact and example to learn to cultivate land and raise cattle and horses, by which many of the Choctaws and Chickasaws, Cherokees and Creeks have become quite wealthy and respectable.

Inasmuch as I am compelled to leave on distant duty, from which I may not return in time for the usual reports to Congress, I will call on the department commanders for subordinate reports, to be transmitted on receipt, and to be supplementary to this; and to them I must refer for more precise details of actual events during the past year.

I am, with great respect, your obedient servant,

W. T. SHERMAN,  
*Lieutenant General Commanding.*

General JOHN A. RAWLINS,  
*Chief of Staff to General Grant,  
Commanding Armies of the United States, Washington, D. C.*

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FORT UNION, NEW MEXICO, *August 11, 1866.*

DEAR GENERAL: I have just returned to this place from an inspection of this Territory, as far as I had the time to make it, and as far as I think it was necessary, and I shall leave here for Fort Leavenworth on the 15th instant. In order that you may understand fully the condition of affairs as it appears to me, and the measures I have adopted to obviate or at least prepare for anticipated troubles, I will begin with my departure from Denver.

As I wrote you from that place on the 2d of July, the condition and feeling of the Ute Indians are unsatisfactory, not to say alarming. In addition to other causes of trouble, the southern bands of these Indians are suffering for food; many of them indeed are in a starving condition. Venison has become very scarce, and in the several attempts they have made to supply their actual necessities by hunting buffalo on the plains, they have been beaten in fight by their hereditary enemies, the Comanches, Kiowas, Cheyennes, and Arapahoes, and driven back to the mountains. The Indian department has refused to supply them even with the scantiest food, and, as you know, it is neither the business of the military, nor in fact, as matters stand, is it in their power to supply these deficiencies. In this state of things, the Utes are compelled either to starve to death or supply their pressing wants by depredating upon the herds and flocks of the nearest settlements. These depredations, although trifling in the quantity of stock taken, occasion, of course, great dissatisfaction and uneasiness among the settlers, and have led to various violent acts which will very soon culminate in open and extensive hostilities, unless something is done to remedy this deplorable condition of things.

The Indians are anxious to be at peace, as they have always been, but they must kill a few cattle and sheep now and then, or starve. For such acts I cannot consider them at war, nor authorize hostilities against them; neither can I prevent this small robbery they are committing, as I have no proper jurisdiction over treaty Indians at peace. I can neither pay the owners of stock thus appropriated, nor withhold compensation from the Indian annuities. The only measures I have the power to adopt consist in making such disposition of the force at my command as will cover as effectually as such a small force can the settlements most exposed to these Indians, and prevent the probability of anything like general hostilities, or a general devastation of the exposed Ute frontier.

If you will examine the maps, you will find south of the dividing ridge, be-

tween the Platte and the Arkansas, a number of considerable streams tributary to the latter river. Of these, the most important are the "Fontaine qui bouillir," the Upper Arkansas, the St. Charles, the Huerfano, and the Purgatory. Between Bent's old fort and the mountains, the valleys of these streams are pretty thickly populated, for this region, and extensively cultivated. The northern extremity of these settlements is Colorado City, (a very small village,) at the head of the "Fontaine," and the most southern the little Mexican village of Trinidad, on the Purgatory, at the base of the Raton peak. The distance between these extreme points is about one hundred and thirty miles. In order to cover these settlements, as far as possible, with the small force disposable, I have ordered the establishment of a post of two cavalry companies and one infantry company, on or near the Upper Huerfano, where it issues from the mountains. This post will be near to the several passes through which the Utes descend to the plains, and about midway between Colorado City and Trinidad. I think it will be sufficient to control the outlets from the mountains, and cover, as far as it is practicable to do so, this extensive range of unprotected settlements. In addition to this post, I shall instruct the commanding officer at Fort Lyon to patrol the valley of the Purgatory and Upper Arkansas, as high up as Pueblo, by a company of cavalry, at least once every month. These arrangements will probably prevent any extensive outbreak and general massacre, but are of course powerless to remedy the causes which are surely bringing about open hostilities with the Utes. I have extended the limits of the district of New Mexico to embrace that portion of Colorado south of Colorado City, for convenience, and because the troops used on the Ute frontier come from this district, and are in more easy communication with Fort Union than with Laramie.

In like manner the settlements in southern Colorado, along the Rio Grande, west of the "Sange de Christo" mountains, (the San Luis valley,) and the settlements west of the Rio Grande, between that river and the San Juan, are open to the depredations of the Utes, who have already done the same acts or loudly complained of east of the mountains.

Fort Garland, on the Rio Grande, at the head of the San Luis valley, is well placed to cover all the settlements along the Rio Grande toward the south. It is about eighty miles west of the new post to be established on the Upper Huerfano, and will contain a garrison of four companies. One hundred miles southeast of Garland, and near to or on the San Juan river, I have also directed a post to be established of four companies to protect the settlements in its rear and on the San Juan.

These three posts constitute a chain of posts along the southern and eastern frontier of the Ute country, and they will, I think, render a general Indian outbreak difficult.

Between the Utes in the north and the Apaches along the extreme southern frontier of New Mexico, there was but one tribe of Indians west of the Rio Grande, (the Navajoes.) These Indians, after an active campaign against them, were collected together by General Carleton and placed upon a reservation on the extreme eastern frontier of the Territory, where, controlled by the presence of a considerable military force, and subsisted by the government, they are still held as prisoners of war.

Large fields have been opened, and the Indians are learning to work in them and at other occupations, so that it is hoped that in a year or two, if permitted to remain, they may be able to contribute largely to their own support. The retention of this reservation where it is, and under present conditions, I do not consider judicious even if it were practicable.

It is unnecessary to say that the past history of our relations with the Indians has made it clear that in the settlement of new territories, the time must arrive when the Indians are so pressed upon by the whites at so many points and

under such circumstances, that the security neither of white nor Indians is longer compatible with the wild life and wandering habits of the Indians. This unavoidable condition of things renders it necessary to restrict the Indian to certain limits, and to buy for the occupation of the white settlers the districts of country thus vacated by him. This necessity has given rise to the "reservation system," to which in the future, as in the past, all the Indians on the continent must be gradually subjected. The necessity and good policy of the reservation system are, I believe, generally, if not indeed unanimously admitted; but the location of these reservations and the conditions under which the Indians are to be placed upon them have given rise to differences of opinion which have greatly obstructed any satisfactory conclusion. In the earlier history of the country, the policy of locating these reservations in the country inhabited by the tribe of Indians concerned was adopted for the Indians of the northwestern States, including Ohio.

Without going into particulars of history too well known, it may be stated as the result of this policy of locating reservations, that after a long period of bloodshed and horror during which the Indians were gradually driven from one reservation to another, the great tribes of Indians formerly occupying the region north of the Ohio and east of the Mississippi have been nearly exterminated, and the scattered and feeble remnants are now found distributed along the extreme western frontier of Kansas and Nebraska.

Of all the powerful and populous tribes which once inhabited the northwest, but a few hundreds of hopeless and helpless stragglers remain. Of the history of the white settlers, the pioneers of emigration in the great States of the northwest, it is unnecessary to speak. Such a record of nameless horrors, of gross inhumanity to whites and Indians, and of lavish and wasteful expenditure of public money, cannot at this day be read without astonishment and indignation. Such a process of extermination of both Indians and white men has never before been permitted to go on under the eyes of a Christian people, and it will long remain a reproach to this government. Feeble, worn out, and dispirited as we find them to-day, these wretched remnants of the powerful tribes once famous in our history cannot yet be left in peace. Some of them have already been removed to the Indian country west of Arkansas, and the remainder will soon follow, and it is hoped that they may there be permitted to die in peace, and their names and tribe be forgotten. Very different was the history of the southern tribes and of the pioneers of Tennessee, Georgia, and other southern States. Warned, apparently, by the deplorable results of the policy pursued north of the Ohio river, the government, in dealing with the southern tribes, so far modified the system of reservation as greatly to obviate most of the evil results which had marked its operation south of the Ohio.

An extensive district of country west of the Mississippi was selected as specially Indian territory, and the southern tribes (after some fruitless efforts to control them in their own country) were at once removed to it without undergoing the intermediate stages which had marked in blood the course of the northern tribes. Compare the condition of the two branches of the same race, now first brought together in this common territory. The southern tribes are still numerous and powerful, and, as far as Indians can be, they are prosperous and progressive.

It is needless to repeat what I have said of the condition of the wretched fragments of the great northern tribes. Contrast, too, the history of the white settlers of the States north and south of the Ohio. In these differences will be found the different results of a policy of Indian reservations located in a country claimed by the Indians, from which they must again and again be removed before the advance of white emigration, and a policy which at once separates the races and removes the Indian to a region selected for his sole occupation, and so remote from his original country that return is hopeless.

The foregoing remarks are simply introductory to a brief statement of the policy which I have so often urged upon the government for the past three years, in letters to the Secretary of War, General Grant, and yourself.

As I have before said, the time inevitably comes in the history of the settlement of new territories when it is necessary for the security of both whites and Indians that the Indians should be placed upon a reservation. That time has arrived in the case of several tribes of Indians within the limits of this department. It is understood to be the purpose of the Indian department to collect these tribes and place them upon reservations in their own country. This process is merely a continuation of the policy which was pursued towards the Indians north of the Ohio, to which I have briefly referred, and must of necessity be attended with like results. It has been tried in Texas in quite recent times; it is being tried in New Mexico to-day, under the most favorable conditions. In both cases it has worked precisely as our history might and should have taught us. Perhaps it will be well to detail briefly the course and results of this system.

An Indian tribe is collected together and placed upon a limited reservation in some part of the same territory; once there, the Indian is partly subsisted by the government and partly subsists himself by hunting.

The Indian is thus left in his own country, every foot of which is familiar to him; he retains his arms and horses; he must of necessity be permitted to indulge to some extent in his wild life and wandering habits; he has nearly unrestricted access to the settlements upon which his depredations have been committed, and is nearly or quite free to maintain his intercourse with the wild tribes and to be subjected to all the influences of savage life. It is in human nature, too, that the Indian agent or the military commander placed in charge of a reservation of this kind should feel a pride in his administration, and in the good conduct of the Indians, and that he should be very unwilling to admit that depredations or outrages were committed by them. These reservations, therefore, soon become places of refuge for the Indian after he has murdered or robbed the white settlers. The advance of the white emigration presses more and more closely around the Indian reservations, and narrows the range of hunting-grounds of the Indian more and more, until each day makes it more difficult for him to supply himself with those articles of food which the government does not give him. The herds and flocks of the settlers, and their property of every kind which the Indian covets, are daily brought more nearly within his reach, and temptingly displayed under his very eyes. The land upon which his reservation is located daily becomes more valuable by the growth of settlements around it, and is therefore daily more coveted by the whites, who, in the exposed settlements and loose state of society on the frontier, are prompt to redress any petty theft or wrong-doing by a bullet. The relentless hate occasioned by the remembrance of violence and outrage committed by these very Indians, makes it impossible for the whites to understand that "the Indian has any rights he is bound to respect." But one result can follow from such relations between whites and Indians: day by day the difficulties and broils increase; all crime committed in the whole country around is charged by the whites upon the Indians on these reservations, until, after outrages and murders on both sides, and great suffering both to whites and Indians, it is finally found absolutely necessary to remove the Indian to another reservation more remote, where, in time, the same causes produce the same results, until the Indian tribe is totally exterminated after something like the extermination of the early settlers. It would be difficult to devise a system which could work more wrong and inhumanity to both races. Our past history is conclusive on this subject. The necessity of placing Indians upon reservations as soon as their relations to white emigration endanger peace, is freely admitted. The question is, "Where shall such reservations be located, and under what conditions shall the Indians be



placed upon them?" A correct answer to this question will go far to solve the Indian problem. There are several elements which enter into the solution of this question.

1st. The Indian must be so placed that he can never again be brought into contact with white emigration, nor obstruct the settlement and development of the new territories.

2d. He ought to be placed where he can be subjected, under the most favorable conditions, to the influences of Christianity and civilization, and be taught to labor and to support himself.

3d. As he must, for a time at least, be supported by the government, he ought to be placed where provisions and other necessities of life are cheapest.

4th. He should be placed where the smallest possible military force would be needed to control him until he had learned to control himself.

5th. He ought to be placed where sympathy and kindness are felt for his race, instead of relentless hostility; where society is established, and the laws thoroughly executed; where the great preponderance of the white population around him, and his security under the law, as well as his immediate and certain punishment for wrong-doing, would deprive him of the power, and, in time, of the inclination to indulge his savage propensities; where all intercourse with the wild Indians, and all power to indulge his wandering habits, would be taken from him; where, in fact, he would be surrounded only with the best influences, and could at least be made a harmless member of the community, if he could not be made a good citizen and good Christian.

It is manifest that not one of these conditions could be secured under a system which should keep the Indian in remote districts of country, in front of the white emigration and in contact with the very advance of the white settlers on one side, and with the wild tribes of Indians on the other.

The plan which I propose differs from that which seems to have been determined on by the Indian department in this, that I propose to remove the Indians of New Mexico, Colorado, &c., &c., to the east, instead of the west; toward that portion of country where food and other necessities of life are cheapest, instead of where these things are most expensive; where the fewest troops, maintained at the least expense, would be needed; where the Indian could no longer be an obstacle to the settlement and development of the great mining regions, nor himself be subjected to that process of certain extermination which his obstruction to the advance of white emigration now renders inevitable, and where he could be placed under all the conditions most favorable to his welfare and security and to the safety of the frontier settlers.

To this plan it is objected that it is too grand in its proportions, and would be attended with too great expense ever to be executed. Let us examine this question.

It is needless to say that it is not proposed to accomplish all this in a year, or in ten, or even twenty years. There are, and will continue to be, wild tribes of Indians, whose existence in a wild state does not endanger the settlement of the country; with these tribes, for the present, it is not proposed to interfere. The tribes to whom it is proposed to apply this system of removal from time to time are precisely the tribes which the Indian department propose to begin to place upon reservations—those tribes which are now so closely in contact with the whites as to endanger both races.

It is also needless to say that the main difficulty consists in collecting these Indians together and putting them en route to a reservation. Up to this point the plan of the Indian department and that suggested by me are identical, as is also the expense; a comparison, therefore, only begins at this point. When once the Indians are collected and ready to move, is it more economical to establish them where food is most costly, and where every necessary of life is an expensive article of luxury? Where twice as many troops would be needed

maintained at four times the expense? Where the Indians would continue to depredate upon the people, and be subjected to the same process of extermination as before—where they would obstruct the settlement of the country and jeopard the peace of the future? Is it really believed that the additional expense of transportation over a few hundred miles would not be many times overcome within a year or two by cheapness of food and decrease of military force? Is it really believed that a temporary arrangement, with all its evils, and, to say the least of it, partial security, can be better than a final and complete disposition of the Indians? Or is there some other reason for establishing and keeping up these unsatisfactory reservations at remote points and at enormous expense, not dictated by humanity, economy, or wisdom, and in opposition to the whole experience of the past?

I presume that I should not differ much, if at all, with the Indian department as to the time when the relations of an Indian tribe to the white emigrants rendered it necessary to place the Indians upon a reservation. I only propose, when that time arrives, we shall make a final and complete disposition of that tribe at least, and not resort to a temporary arrangement, which is attended with little but evil.

It may safely be left to such persons as the government may select to determine the place where a reservation for any given tribe of Indians shall be established. Such places can be readily found along the Mississippi or Missouri. Only let the government adopt some policy which secures an end to Indian troubles and massacres, however far in the future, and the details will readily be adjusted. Only let us have a final result, and not a temporary arrangement, which leaves the last state of the Indian and white man worse than the first.

In accordance with these views I consider it both wisdom and economy to remove the Navajo reservation to some point in the Indian territory west of Arkansas. There is no doubt that the present disposition of these Indians is the best that could have been made at the time, and that their subjugation and establishment under the eye of a military force, where the Indian is taught to labor, and, as far as possible, is restricted to certain limits, reflect great credit upon the energy, good sense, and good management of General Carleton, who commands in this Territory; but, at the best, such an arrangement is temporary, and the time has now arrived (as indeed it existed as soon as these Indians were collected together) to remove them altogether beyond the limits of the Territory. General Carleton, at the time he established the Navajoes at this reservation, had not the power to carry them further away from their original country. He removed them as far as possible—to the extreme eastern boundary of the military department he then commanded, and could do no more.

The difficulties and quarrels, and the dissatisfaction on both sides, occasioned by a location of Indian reservations in the country of the Indians, and which I have sketched in some detail heretofore, are in full blast in New Mexico concerning this Navajo reservation, and nothing is heard except complaints of robbery and murder by Navajoes, which the Indians counterbalance by very similar charges against the Mexicans. The expense of feeding these Indians where they are is at least four times what it would be in the Indian territory west of Arkansas, while twice as many troops are needed to guard them here as would be needed there.

In my judgment these Indians ought to be removed at the earliest moment. The cost of moving them would only be the expense of a train to haul the necessary subsistence for them to their place of destination—an expense which would be repaid many times to the government by the decreased cost of feeding the Indians.

The various bands of Apache Indians, too, should be collected from time to time and removed to the same region.



The bands of Utes in Colorado and the northern part of New Mexico, as well as the Indians of the plains to the eastward, are in such relations with the whites that they too must be collected on reservations, or the communications between the mining regions and the agricultural districts along the Missouri which supply them with food will be strictly cut off, or so much interrupted as to occasion suffering, if not actual destitution. It is needless to say that there is no idea of doing all this at once. Time and patience are needed to complete these operations, but when once completed, the matter is settled forever. Reservations for these Indians of Colorado can be readily secured along the Missouri river. Meantime we are obliged to take things as we find them, and to make such use of the military force as will obviate as far as possible the evil results of a system of Indian policy which to-day stands condemned by the whole history of the past. Indian wars, and massacres of both whites and Indians, must continue as long as the causes which occasion them remain in force, and as these causes of trouble are every day increasing with the increase of population, we must anticipate in the future an increase in the frequency and violence of Indian outbreaks.

I have established only one new post on the Apache frontier, and that is located near the head of the Mimbres river, about one hundred and fifty miles west of the Rio Grande. This post, with Fort Cummings at Cook Spring, Fort Selden on the Rio Grande, Fort Stanton on the Bonito river, between the Rio Grande and the Pecos, forms a line of posts covering the southern frontier of New Mexico from the Apache Indian.

Some of the posts hitherto established between the northern and southern line of posts I have kept up, to protect the settlements against small raiding parties which might slip through the outer lines. Fort Union, Fort Bascom on the Canadian river, one hundred and fifty miles southeast of Union, cover the eastern frontier of New Mexico against the Comanches and other Indians of the plains, and will be garrisoned by six companies of cavalry, disposable for rapid movements on the plains to protect the routes to the Missouri river. With these dispositions of the troops assigned to New Mexico I think all the protection will be afforded which can be under the present system of Indian management.

The same force now engaged in affording this partial protection is entirely sufficient to effect the removal of the Indians from this Territory, as I have suggested, a removal alike demanded by humanity and common sense. A list of the posts, their exact location, and the garrison of each I will send to your office in St. Louis, as I presume you will not want it in your journey. I also send to your headquarters much detailed information concerning the supply of the posts in this Territory, and the unnecessary additional expense occasioned by the bad practice which has grown up during the war of making all contracts at a great distance from the country to be supplied, under the direction of officers totally unacquainted with the resources, people, manner of doing business, prices, or anything else in the districts in question, and utterly without experience or knowledge of service on the frontier. I will make a special report to you on the subject when you return, and meantime I beg that you will inquire into the workings of this system of concentrating the management of contracts and supplies at Washington or other places remote from the districts to be supplied, and of giving direct orders from the staff bureaus in Washington to subordinate officers concerning the details of service in this department, without regard to the orders on the same subject given by the department commander, and indeed without any notification to him. In your present journey you will have the opportunity to see how injuriously to the public interests and to proper discipline or performance of duty such a system works, and how impossible it is for the department commander to be responsible for the expenditures or in fact the administration in any respect of his department. This special report

will be ready for you when you return, and can be corroborated by your own observations.

In conclusion, I submit a few general observations concerning Colorado and New Mexico, with which for the present I will end a letter already much longer than I intended to make it, or perhaps than was necessary.

Colorado and the routes east from the mining regions need more troops. There ought to be a post on the Middle Park, west of Central City, to cover the mining population from the Ute Indians. I should suppose that for the present one company of infantry and two of cavalry would be sufficient. It is also desirable to establish a post on the Smoky Hill route, between Pond creek and Denver, near Beaver station. I will endeavor to detach sufficient force for this purpose from Lyon and Pond creek, although I fear there are not enough men at those posts for the purpose. I have ordered one company of the 18th United States infantry to take post near Denver for escort to trains and other purposes. The land for this force has been given by the citizens free of expense, and the necessary lumber for quarters can be furnished by the quartermaster at Denver from buildings now unoccupied and owned by the government.

The necessity of keeping an office of the quartermaster and subsistence department at Denver, as suggested to you in my letter of July 2, you will see for yourself during your visit.

For the garrison of Fort Garland by far the most important post on the Ute frontier, I have authorized the retention until their term of service expires of four companies of New Mexican volunteers, to be consolidated from other companies of the regiment under the command of Kit Carson, who is now the colonel, but who will be reduced to lieutenant colonel. I need not say that Carson is the best man in this country to control these Indians and to prevent war if it can be done. He is personally known to and liked by every Indian of the bands likely to make trouble, and the men he will retain are perfectly familiar with the Indians and the country. I think this battalion should be permanently retained for service on the Ute frontier. I shall consider the government peculiarly fortunate if war with the Utes can be avoided under the provoking condition of things which I have referred to in the first part of this letter. The damage this tribe could do to the widely scattered and exposed settlements in southern Colorado, and New Mexico, on both sides of the mountains, is incalculable, and we have no sufficient force to prevent such depredations. Peace with these Indians is of all things desirable, and no man is so certain to insure it as Kit Carson.

I must again state to you that I do not consider the treaties lately made with the Sioux, Cheyennes, Arapahoes, Kiowas, and Comanches worth the paper they are written on, for reasons which I have given you so often that you must be sick of hearing them.

I have myself no doubt that hostilities will again break out on the Platte, the Smoky Hill, and the Arkansas rivers before the beginning of winter, and I have accordingly made all the arrangements possible with the small force at my command in this view; what can be done will certainly be done to protect the overland routes, but I fear without much success in case of a general outbreak. I will carefully instruct the posts along the Arkansas on my return, and will place them in the best possible condition for the active service into which they may any day be called.

Very respectfully, yours,

JNO. POPE,  
*Major General.*

Major General W. T. SHERMAN, *Denver, Colorado.*

Official copy :

W. A. NICHOLS,  
*Assistant Adjutant General.*

## REPORT OF MAJOR GENERAL H. W. HALLECK.

HEADQUARTERS MILITARY DIVISION OF THE PACIFIC,  
*San Francisco, California, October 18, 1866.*

**GENERAL:** In accordance with the instructions of General Grant, I send herewith the reports of Major Generals Steele and McDowell of the military operations in their respective departments during the past year.

It will be seen from the report of General Steele that the Indian hostilities have been mostly confined to that portion of Oregon and Idaho surrounding the valley of Malheur lake, and on the upper waters of the Owyhee river, as designated on the map forwarded with my report of August. Most of the Indian depredations in northwestern California and northern Nevada have been committed by the same hostile tribes, viz: the Bannacks, Pi-Utes, and Snakes. The hostility of these Indians is no new thing; they have been at war with the whites, murdering and robbing whenever they could get an opportunity for the last twenty years. They have no fixed habitation, but are continually changing their location in various parts of that extensive country, most of which is mountainous and almost inaccessible for want of roads, and portions of it entirely barren. The travelled roads most molested are those from Star City, Nevada, and Susanville, California, to Ruby City, Idaho, and from the Dalles, Oregon, to Boise City, Idaho. General Steele has two companies of infantry and one of cavalry on the Cañon City road, and I hope to be able to send him two or three other companies of cavalry in the course of a week or two. On the mail route from Chico to Idaho there are four one-company posts, viz: Camp McKee, on Mud lake, Camp McGarry, at Summit lake, Camp C. F. Smith, and Camp Lyon. On the mail route from Star City to Idaho we have a post at the Three Forks of the Owyhee, one at Camp McDermitt, and a new one is now being established in Paradise Valley. Although these will serve to keep the Indians in check, they cannot entirely prevent their depredations, for small parties occasionally conceal themselves on the roads, or visit isolated ranchos, for the purpose of murder and plunder. Hostilities will not entirely cease till these Indians are killed or captured. It will be seen from the reports that much has been done during the past year to break up these savages, and I think that still more will be accomplished during the coming winter.

In northwestern California the Indians have been generally quiet, and the posts at Camps Wright, Gaston, and Lincoln are kept up on account of the Indian reservations in the vicinity of each. Since my report of August 4 the post on Humboldt bay has been broken up. Camps Bidwell and Warner and Fort Klamath are in the hostile Indian country, and convenient for sending out scouting parties.

Camp Independence, on Owens river, in southeastern California, was a two-company post, but General McDowell has recently sent detachments from that place to form temporary camps in Nevada, near the White Mountain range, to protect the mining settlements there. No serious difficulties have yet occurred in that part of the country.

In regard to military operations in the Territory of Arizona, the accompanying report of Major General McDowell is so full as to require but few remarks by me. I respectfully call your attention to what is said in regard to the want of company and regimental officers, and also to the remarks on the value of the native troops there. It is greatly to be regretted that they could not be retained in service. The experiment of cultivating a government farm near Fort McDowell has been a complete success, and will serve to encourage agricultural settlements in that part of the country.

The Apache is a bitter enemy to all white settlers, having been at war with them for the last half century. There is no hope of peace in that country till

he is destroyed or thoroughly conquered. His style of warfare is simply that of murder and robbery. As these Indians are scattered in small bands over an immense extent of country, very sparsely populated, and with few good roads, they must be hunted and exterminated. They will not fight except at a great advantage, and with the certainty of plunder. The murder and robbery of travellers and isolated settlements, and the stealing of herds, constitute their principal occupation, and furnish them with the means of their precarious subsistence.

Very respectfully, your obedient servant,

H. W. HALLECK,

*Major General Commanding.*

Brevet Major General E. D. TOWNSEND,

*Assistant Adjutant General, Washington, D. C.*

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HEADQUARTERS DEPARTMENT OF CALIFORNIA,

*San Francisco, California, October 18, 1866.*

SIR: I have to report as follows in compliance with instructions from division headquarters of October 4, 1866:

DISTRICT OF HUMBOLDT.

This district comprises the northern coast counties of California. It is inaccessible to wagons, and is reached from the other settled portions of California either by trail over the mountains, or by sea.

During the rebellion; and prior to my coming out, an extensive Indian war broke out in this district, and a large force of volunteers—some of them raised especially for the service—were occupied in waging it. Last year a large body of Indian prisoners who had been made in the course of the hostilities, and had been kept on the sand spit opposite Fort Humboldt, were sent to the "Round Valley reservation."

The volunteers were all mustered out, and their places supplied by the regular forces.

Everything is at this time, and has been for some time past, quiet in the district, and no immediate trouble is anticipated unless the whites should, as they have been too apt to do, provoke it. When the company of artillery now at Fort Humboldt leaves that station, and it becomes reduced to a mere depot, there will be but two posts maintained in the district—one of one company of the ninth infantry at Camp Lincoln, not far from Crescent City, near the "Smith River Indian reservation," and one of two companies of the ninth infantry at Fort Gaston on the Trinity, and the "Hoopa Valley Indian reservation."

DISTRICT OF CALIFORNIA.

This district was broken up last March. It occupied that part of California north of Tejon Pass, and not included in the district of Humboldt. It was organized during the rebellion, and with reference to the disloyal inhabitants. On the return of peace the posts and stations were reduced as rapidly as possible, and there remain in it now, outside the small peace garrisons, in the permanent works in the harbor of San Francisco, but three posts—one of one company of the ninth infantry at the "Round Valley Indian reservation," Mendocino county, one of two companies, one of the ninth infantry, and one of the first cavalry, at Camp Bidwell, in Surprise valley, to protect the frontier settlements from the hostile Indians of northern Nevada and southern Oregon, and guard one of the routes from the Sacramento river, in California, to Idaho. This

post also furnishes a small guard for the settlements near Fort Crook. The third post is at Camp Independence, Owens River valley, beyond the Sierra Nevada, and consists of a company of the ninth infantry, and one of the first cavalry.

During the first years of the war the Indians were very hostile in this section of the country, but were finally overpowered, and a large number of them were carried off to the "Tule River Farm Indian reservation," near Visalia. The Indians from Owens River valley were not contented at the reservation. The hot climate and low land being so different from their own, and the larger part of them having fled from it back to their old haunts, an attempt was made last year to again get them back, but without success; they fled to the mountains.

The establishment of Camp Independence has given protection to settlers established in the valley, and I do not doubt they will soon raise all the supplies required for the troops. It already supplies all the grain, hay, and beef.

I have given orders for establishing an out-post from Camp Independence, at or beyond Silver Peak, in Nevada, to protect the settlements in the southern part of that State.

The difficulty here, as it is everywhere else in this country, is with the whites more than the Indians. Could the former be placed under some restraint, and not suffered to shoot and maltreat the natives with utter impunity, we would have no trouble whatever. In the northern part of the valley the Indians work in the mines and on the farms, and they would do so in the southern portion, below the camp, but a few of the settlers who believe in shooting every Indian on sight prevent it, and force them to remain in the mountains, whence they from time to time come forth to steal, that they may not starve.

There are tribes of Indians living to the east and southeast of Owens river that have as yet had but little to do with the whites, and it is mostly by these that the principal depredations have been committed. The force now at Camp Independence will be sufficient, it is believed, to protect all the settlements in that quarter.

The posts in the harbor of San Francisco have been reduced to small skeleton garrisons of the second artillery in the principal forts; one company at Fort Point; two companies at Alcatraz, and one company at Point San José, with the two battery companies of the regiment at the Presidio.

The stations at Monterey, Benicia barracks, Camps Union, near Sacramento, and Babbitt, near Visalia, Camp Reynolds, on Angel island, and Fort Crook, (except a squad of men attached there from Camp Bidwell,) have all been abandoned.

There is, I think, no danger to any of the settlements in the late district of California; the only apprehensions are from the settlers in the vicinity of Fort Reading.

#### DISTRICT OF SOUTHERN CALIFORNIA.

This district was also discontinued last March. The post at San Diego has been broken up, and that at Drum barracks and Wilmington depot, on the execution of orders recently issued, will be reduced to a regimental quartermaster and a squad of fifteen men.

One company is all that now remains in this late district. This company is stationed in two detachments—one at Drum barracks, one at Camp Cady; existing orders will further subdivide it into three detachments—two as above, and a third at Rock springs.

The detachments at Rock springs and Camp Cady are for the purpose of protecting that part of the road from Los Angeles to Prescott, Arizona, which lies between the Cajon Pass and Fort Mojave. This is the only United States mail road from California to Arizona, and has been much infested by roving parties



of Indians, who have given much uneasiness and inflicted considerable injury on the settlers and travellers.

The young officer stationed at Camp Cady attempted to chastise a party which passed near his station in open day and was badly defeated, with several of his men killed and wounded. He has asked for a court of inquiry, which will be granted as soon as officers can be had from which to constitute it.

The establishment of a second station on the road, as above mentioned, will give it all the protection the present force will admit of.

The other parts of this section of the country are quiet.

#### DISTRICT OF NEVADA.

The volunteers were all relieved early from this district, and it now has two small posts of a company each at Churchill barracks and Camp Ruby, for the protection of that part of the great "overland mail route" from the Pacific to the Atlantic which lies within my department, and two stations for the protection of the roads to Idaho and southern Oregon, one of a company of cavalry at Camp McDermitt, for the road from Virginia City through Star City and Queen's River valley, and one at Camp McGarry, of a company of the ninth infantry, and one of the first cavalry for the protection of the Idaho mail road from Chico through Susanville, Pueblo, &c., to the Owyhee.

There have been within the last two years several Indian combats in the northern part of Nevada, in the vicinity of the routes which the posts of Camps McGarry and McDermitt are intended to protect, and many Indians have been killed and captured and driven away from the settlements. The orders from division headquarters are now being carried into effect for the establishment of a camp of a company of cavalry at Paradise valley.

Though there were during the summer great complaints of want of protection near Paradise valley, and of depredations committed there, there have been no serious disturbances to record, and it is believed the company now under orders will give all the additional force necessary in this part of Nevada.

Since the discontinuance of the district of California, the post of Camp Bidwell has been transferred to the district of Nevada, and, as the operations of the troops in Nevada have freed the central part of the State from hostile Indians and driven the larger part to the north, the headquarters of the district have been changed from Churchill barracks to Camp McGarry, as a more central point with respect to future movements against those who continue to give us trouble.

#### DISTRICT OF ARIZONA.

The regular troops in this district consist of the first and third battalions of the fourteenth infantry, four companies of the first United States cavalry, and one company of the second United States artillery. Until very recently there were also several companies and fragments of companies of Arizona volunteers. The latter have been ordered to be mustered out on the expiration of their year's term of service, and most, if not all, have by this time been discharged. They were the most effective troops for the service in that country that we have had, and have done more than all the others together. In fact, it is not too much to say that they only within the last year have inflicted any considerable injury on the hostile Apaches. The regular troops, used to a different kind of warfare, unused to the kind of life necessary to obtain any results against the Indians in Arizona, seem to acquire very slowly the experience necessary to enable them to be effective for offensive operations.

For a more complete description of Arizona Territory, and account of the disposition of the Indian tribes, &c., than can be given in this paper, I beg to

refer to my special report, dated March 23, 1866, made on my return from a tour of inspection throughout the district. Since the date of that report the post of San Diego has been abandoned, and the company stationed there transferred to Fort Yuma. This, with a company of the fourteenth infantry, now constitute the garrison of the latter place, which, together with the company at Fort Mojave, are expected to keep the peace along the line of the Colorado river, and furnish guards for the supplies and cattle that go therefrom into the interior.

There has been a good deal of uneasiness within the year at several points along the river, particularly at La Pas, the mouth of Bill Williams's fork, Hardyville, and El Dorado cañon, and it has been impossible to furnish the protection asked for, except to a limited extent. The hostility existing between the River Indians and certain bands of the Pi-Utes and Chemehuevis has caused alarm to the white inhabitants who have been, and are, friendly to the Mojaves. The killing of the head chief, Waba Yuma, of Hualapais, by some whites on the road from Hardyville to Prescott, has also unsettled the good relations heretofore existing with those Indians.

The hostilities on the road from Camp Cady to Fort Mojave with the Pi-Utes seem to have extended their effects to the Indians of that or kindred tribes further to the north, and there have been offensive movements against the important mining settlements at El Dorado cañon. This has given alarm to those engaged in the enterprise of opening a line of trade by way of the Colorado river to Utah, and they fear their boat with its supplies may be in danger. At their repeated and earnest request I have ordered a guard of ten men to be detached from Fort Mojave to be stationed for sixty days in El Dorado cañon. This, I since learn, will take every man, not on special duty, away from the post, the others being absent escorting cattle to Fort Whipple.

The Indians, who have heretofore been quiet on the road from La Pas to Prescott, and have confined themselves to limits prescribed by the military commander and Indian superintendent, were found in large numbers beyond their limits in Skull valley. It is claimed they were there with hostile intent, and that they attacked a private train under escort of some Arizona volunteers. The result was an engagement, in which a large number of Indians were killed and wounded; it remains to be seen whether enough to subdue the tribe, or only to rekindle it.

The Arizona volunteers, heretofore stationed in Skull valley, having been mustered out of service, their place has been supplied by the company of the fourteenth infantry, from Date creek, and the stations at the latter place and at Wickenburg have been abandoned.

The post of Camp Lincoln, on the Upper Verde, has proved so favorable for operations against the Apaches that it will be maintained by a company of the fourteenth infantry, though the force, both in quality (for this kind of service) and quantity, will not replace the volunteers whose places they take.

The post at Fort Whipple, near Prescott, will be kept up for the present.

The post of Fort McDowell, on the Lower Verde, now occupied by three companies of the fourteenth infantry and one company of the first cavalry, has, together with the post of Camp Lincoln, inflicted so severe a chastisement in repeated combats with the Apaches, that they have compelled them to beg for peace. This, heretofore, has been offered them on condition they would go to the place reserved for Indian prisoners at Fort Goodwin. But they represent that they are at enmity with the Fort Goodwin bands, and cannot live with them.

I am not sure they are sincere in their desire for peace; but as they may be, and as I have now lost the force most competent to further chastise them, I have given instructions to grant them peace on the terms proposed to them by the late excellent commander of Fort McDowell, which will provide for their coming in as prisoners, in the vicinity of that station, and there plant and keep the peace with the whites and their allies, the Gila Indians, the Pimas and Maricopas



The post of Fort Grant, (two companies of the fourteenth infantry,) at the mouth of the San Pedro, has been recently destroyed by the floods of the river, and the station has been removed to the site of old Fort Breckenridge. I hope soon to change it to the heart of the Apache country, where the climate may prove more healthy, and there is an abundance of wood and grass, as well as pure mountain water.

The post of Fort Goodwin, occupied by three companies of the fourteenth infantry, is the place I have assigned for such of the Apaches as have surrendered themselves, and claim to wish to live in peace with the whites. At times several hundred have been on the reservation, but the difficulty of at all times having supplies for them has made it necessary to relax the rule for their constant presence, that they might lay in a store of mescal, &c., for food. This may have been taken advantage of in some instances to escape and commit depredations on the settlements. I do not expect in one season to reform a people whose whole life has been one of plunder, but I have no doubt that a combined system of kindness, when they do well, and chastisement when they do ill, will have the same effect on Apaches as it has on other men, as well as animals.

Owing to sickness in the valley, the small post on the San Pedro, above Fort Grant, has been abandoned.

The camp on the upper San Pedro, near Barbecoma, is still maintained as a protection for the settlements, as are also the stations at Fort Bowie and Tucson. The companies stationed at Fort Mason, (so called,) on the upper Santa Cruz near Calabasas, have been temporarily removed (by the district commander, on account of sickness) to the vicinity of old Fort Buchanan, whether to any good purpose remains to be seen.

The cost of transportation is so great into Arizona that I have felt it good economy to do everything possible to raise, and stimulate others to raise, supplies in the country.

I am glad to say that the experiment of a government farm on a large scale in the valley of the Verde, at Fort McDowell, has proved a success, and an abundant crop of corn and sorghum is about to be harvested, to be followed by a second crop of small grain.

Like results are expected from the farm ordered to be opened at Fort Goodwin, so I hope that next year will show a reduction in the cost of maintaining the troops, to be followed by reductions in every succeeding year, for there is an abundance of good arable land in the country to support a large population.

A great drawback to the service in the department is the lack of officers, both staff and regimental.

There should be at least four officers of the quartermaster's department in Arizona alone. There are but two there now, and they belong to the volunteer service and will undoubtedly soon be mustered out.

The lack of company officers is such that at times companies are without a commissioned officer. At one time a post of two companies in Arizona had only one officer, a *subaltern*, to command the post, the two companies, and do the duty of quartermaster and commissary.

Under authority given me from division headquarters to raise a hundred "Indian scouts," I have directed the district commander in Arizona to enlist seventy Pimos and Maricopas and twenty tame Apaches.

I send herewith reports of the combats with the Indians in the department since the beginning of last year, and a tabular statement of the changes in the stations of troops since July, 1865.

I have the honor to be, very respectfully, your obedient servant,  
IRVIN McDOWELL,

*Bvt. Major General, Commanding Department.*

Bvt. Lient. Col. R. N. SCOTT, *Ass't Adj't General,*

*Headquarters Military Division of the Pacific,*

*San Francisco, Cal.*

HEADQUARTERS DEPARTMENT OF THE COLUMBIA,  
*Fort Vancouver, W. T., October, 1866.*

COLONEL: Pursuant to instructions by telegram from the major general commanding the division, I have the honor to report the military operations in this department during the past year, so far as information can be obtained from the records at department headquarters. It is believed that officers have not, in all instances, forwarded reports of their scouts among the Indians. I assumed command of the department on the 24th of February, 1866. The command was composed of one battalion, fourteenth United States infantry, 793 men, seven companies of volunteer infantry, 553 men, and four companies of volunteer cavalry, 319 men, besides three companies of artillery, two occupying permanent works at the mouth of the Columbia river, and the other at San Juan island. The enclosed list will show the strength of the command, and of that at each station. The troops stationed in the Indian country were divided up into small detachments, which were so far separated from each other that they were scarcely able to defend themselves against the attacks of hostile bands. When these detachments were divided up, and scouting parties sent out, there was more or less danger that the Indians would capture the camps before their return. In some instances scouting parties were attacked, had to fight their way back to camp, and very narrowly escaped with their lives. Some of the volunteers had been ordered to Fort Vancouver for muster-out, but owing to the snow and the state of the roads were unable to get in until after the weather became settled in the spring. I ordered the small camps to be broken up, and the detachments to be concentrated at the most important points, as soon as the state of the roads would permit. It was necessary to abandon some stations on account of there being orders to muster out the volunteers, and there being no other troops to replace them, Camps Wright, Polk, Curry, Logan, Lander, Reed, Alvord, and Fort Lapwai were abandoned. The troops at Wright, Curry, and Logan were moved to Camp Watson, and part of those at Alvord to Camp C. F. Smith, on White Horse creek. Those at the other camps named were mustered out of service as soon as they reached their rendezvous. The volunteers at Camp Watson were afterwards relieved by a company of the first United States cavalry. Those at camp C. F. Smith and Camp Lyon were relieved by a company of the fourteenth infantry and one of the first United States cavalry, and all mustered out of service, except one company of the first Oregon cavalry, 60 men. There is also one company of the first Oregon infantry still in the service at Fort Klamath, Oregon.

Nothing is known at these headquarters of any operations in the field in this department during the past year previous to December, 1865. On the 25th of that month the Indians made a raid on Camp Alvord and ran off 40 mules; Captain F. B. Sprague, first Oregon infantry, pursued them and recovered all the mules. The Indians killed one of his horses and wounded two others; one Indian was wounded. Captain Sprague states in his report that the Indians had driven off all the good horses in the raid of November 5. February 7, Captain L. L. Williams, first Oregon infantry, reports that he went out on a scout from Camp Wright, and had one man killed by Indians on the south side of Harney lake, February 4, 1866. On the 21st of February Captain F. B. White, first Oregon cavalry, reports that on the 14th of that month he heard at Camp Lyon that the Indians had attacked Hall's ranch on Jordan creek; that he immediately sent Lieutenant Silas Pepoon, first Oregon cavalry, in pursuit of them; Pepoon found Hall badly wounded and the ranch nearly destroyed by fire. He followed the Indians, killed one and recovered thirty-six head of cattle and horses; one man of the command was wounded. Brevet Major F. W. Perry, fourteenth infantry, reports that he left Camp Curry on the 13th of February with 44 men and scouted south around Harney lake, and returned to camp on the 23d, having marched 152 miles in eleven days

without seeing any Indians. Captain J. H. Walker, fourteenth infantry, **was** ordered from Camp Lyon to scout the country between the Malheur and Owyhee rivers. On the 23d of February he encountered a party of Indians, killed 18 and wounded 2 of them, captured 19 horses, a few rifles, 15 pounds of powder, 20 pounds of balls, and 300 pounds of dried beef. He lost **one** man killed and one wounded. On the 24th of March Captain J. H. Walker started from Camp Lyon with 29 men and scouted to the Owyhee river; **crossed** the river and scouted through to the Malheur river. He returned to camp **on** the 10th of April without having seen any Indians. On the 2d of **March** Major L. H. Marshall, fourteenth infantry, was sent from Fort Vancouver to take command of the district of Boisé. He left Fort Boisé, March 28, **on** a scout, went 110 miles, and returned on the 17th of April without having had an encounter with Indians. On the 30th of April Captain James Henton, with one company, second battalion, fourteenth infantry, arrived at Fort Vancouver from Cape Disappointment, Washington Territory, and on the 4th day of May proceeded to Fort Boisé with his command. On the 16th of April Brevet Colonel J. B. Sinclair, fourteenth infantry, with a detachment of recruits of same regiment, left Vancouver, proceeded to Dalles, Oregon, and thence to Camp Curry. Assuming command of the garrison at Curry he abandoned the post and marched his command to Fort Boisé, Idaho Territory. Colonel Sinclair scouted the country thoroughly between Camp Curry and Boisé. On the 18th of April Brevet Lieutenant Colonel J. J. Coppinger, with one company of the second battalion, fourteenth infantry, marched from the Dalles by Meachem's route to Fort Boisé, scouting the country. Brevet Major F. W. Perry, fourteenth infantry, left Camp Curry, April 16, on a ten days' scout on the Cañon City road, with no result. On the 29th of April Captain P. Collins, fourteenth infantry, had scouted the country thoroughly between Camp Lyon and Snake river, without having seen any signs of Indians. From the 18th to the 29th he was scouting on Squaw creek. On the 18th of April Lieutenant Amandus C. Kistler, fourteenth infantry, was sent from Fort Steilacoom to Neeah bay with 30 men and 2 howitzers to quell Indian disturbances. On the 21st of April he reports that he had captured 18 Indian prisoners and sent them to Fort Steilacoom, six of whom were charged with murder. He made the Indians surrender by throwing shells into the woods beyond them. On the 20th of April Captain F. B. Sprague, first Oregon infantry, was ordered to abandon Camp Alvord and proceed to Camp Lyon. On the 30th of April Captain P. Collins, fourteenth infantry, with 25 men, went on a scout to the Burnt River district; no result.

Major General Halleck ordered four companies of the first United States cavalry from California to this department April 4, 1866. Two companies, H and I, came to Fort Vancouver April 15, and were mounted there. H company was ordered to Camp Watson May 7, and I company May 30, 1866. May 21, Captain David Perry's company, first United States cavalry, came into southern Oregon by the Chico route, and Captain James C. Hunt's by the Humboldt route; the former took station at Camp C. F. Smith, and the latter at Camp Lyon, Idaho Territory. Captain P. Collins, fourteenth infantry, scouted on Malheur river from the 3d to the 23d of May; saw no Indians. On the 4th of May Captain F. B. White, first Oregon cavalry, went in pursuit of Indians committing depredations on Jordan and Reynolds's creeks. He recovered twenty head of stock taken from the citizens. On the 11th of May Major Marshall left Fort Boisé with 84 men on a scout up the Owyhee river. On the 16th of May Captain L. L. Williams, first Oregon infantry volunteers, left Camp Curry and scouted over an unexplored region, but saw no Indians. On the 4th of June Major Marshall returned from his scout on the Owyhee; he found 500 Indians at the Three Forks of the Owyhee strongly posted on the opposite side of the South fork, between the South fork and Middle fork. The river

was impassable. He moved down eight miles and crossed in a boat which he improvised. As his advance moved up the bluff they were fired upon by Indians concealed behind the rocks. He fought the Indians altogether four hours; killed seven and wounded twelve; lost one non-commissioned officer, killed. The Indians were so strongly posted that he could not advance upon them, and was obliged to recross the river. In this operation his boat was swamped; he lost a howitzer, (which was afterwards recovered,) abandoned some provisions, and threw some boxes of musket ammunition into the river. Captain James Henton's company, B, second battalion fourteenth United States infantry, was sent from Fort Boisé, June 16, to establish a camp in the Flint district to protect the citizens against Indians. Captain J. H. Walker's company, C, second battalion fourteenth infantry, left Fort Boisé, on the 21st of June, for Camp C. F. Smith, to relieve the cavalry company which was ordered to the Owyhee country. Captain P. Collins's company, D, second battalion fourteenth infantry, was ordered the same day to proceed to Warner's lake and establish a camp there. On the 23d of June Brevet Colonel J. B. Sinclair, fourteenth infantry, with a detachment of cavalry and infantry, was ordered to destroy an Indian camp on Antelope creek. He did not catch the Indians. Soon after this the Indians corralled some citizens in the Owyhee mining district, and Brevet Lieutenant Colonel John J. Coppinger, fourteenth infantry, moved with his company, A, second battalion fourteenth infantry, from Fort Boisé by forced marches to their assistance. Great consternation prevailed in Silver and Ruby cities. The women and children were locked up in the crushing-mills. The Indians got wind of the troops and left before their arrival.

July 15, Brevet Colonel J. B. Sinclair, fourteenth infantry, left Fort Boisé with his company for the purpose of establishing a camp at the mouth of the Bruneau river. On the 16th of July Brevet Lieutenant Colonel J. J. Coppinger, with his company, A, Captain James Henton, with his company, B, second battalion fourteenth infantry, and Captain David Perry's company, F, of the first United States cavalry, moved from the Flint district to the Three Forks of the Owyhee. On the same day Major Marshall left there with two companies of the first United States cavalry, and Captain F. B. White's company, B, first Oregon cavalry, for the Bruneau river. Major W. V. Rinehart, first Oregon infantry, went out from Fort Klamath in pursuit of hostile Indians, and returned on the 20th of July with eight of the Snakes as prisoners. Lieutenant R. F. Bernard, first United States cavalry, with 34 men, left Camp Watson, Oregon, on the 4th of July, in pursuit of Indians that had been committing depredations on the Cañon City road. On the 18th of July he detached Sergeant Thomas W. Connor, with 18 men, to look for a party of Indians. The sergeant discovered them in camp on Rattlesnake creek, and immediately charged them, killing 13 and wounding many more. He captured four horses and two mules. Corporal Lord was killed. On the next day Lieutenant Bernard attacked this band again and dispersed them, capturing two women, two children, three horses, and a very large quantity of camp equipage; also, twenty head of beef cattle, which had just been killed and jerked. The Indians numbered about 300. Lieutenant Bernard returned to Camp Watson July 30, having marched six hundred and thirty miles without having lost a horse.

Major L. H. Marshall, fourteenth infantry, started from the mouth of the Bruneau with the three companies of cavalry, August 4, on a scout to Goose Creek mountains. Major Marshall has been in the field ever since, and has rendered no official report of his scout yet, but he informed me verbally that, while scouting on the south fork of the Owyhee, his command killed 35 Indians. He ascertained, through an old Indian who was captured, that the Reese River Indians brought ammunition and traded with the Snakes for the stolen stock. From Three Forks of the Owyhee Major Marshall crossed over



the hills to Camp C. F. Smith. From there he went to Stein's mountains; was at Camp Warner on the 20th of September, and was going from there to Harney lake. On the 8th of August Brevet Lieutenant Colonel R. F. O'Beirne, fourteenth infantry, left Vancouver with his company, proceeded to Dalles, and was ordered to march by the Cañon City road to Boisé, scouting the country along the route. Brevet Lieutenant Colonel E. M. Baker, first United States cavalry, left Camp Watson with 34 men, on the 23d of August, in pursuit of Indians that had run off a band of government mules—number not reported. He found thirteen mules wounded with arrows, and saw where seventeen others had been killed. He captured one squaw and two children, and returned on the 4th of September. On the 3d of September Captain James Henton, fourteenth infantry, marched from Three Forks of the Owyhee to the Bruneau river, scouting the country along the route. On the 5th of September Captain James Henton's company, B, second battalion fourteenth infantry, was ordered from the mouth of the Bruneau to Warner's lake. September 6, Captain David Perry's company, F, first United States cavalry, was ordered to take forty days' rations and scout through the Malheur country to the Cañon City road. September 8, Brevet Lieutenant Colonel J. J. Coppinger, fourteenth infantry, was ordered to establish a winter camp fifteen miles east of the Three Forks of the Owyhee, and to build a block-house at the Three Forks. On the 10th of September Captain James C. Hunt, first United States cavalry, was ordered with his company to scout the country between Stein's mountain and Harney lake. On September 21, Brevet Major E. Myers, first United States cavalry, was ordered from Major Marshall's scouting party to report to the commanding officer at Camp Warner. September 23, Brevet Lieutenant Colonel R. F. O'Beirne, fourteenth infantry, was ordered from Fort Boisé to scout the Burnt River district, where the Indians had been stealing stock lately.

It will be observed that in these changes of station the troops moved through country frequented by Indians. The company of infantry at Fort Steilacoom has been ordered to be relieved by a detachment of artillery from San Juan island, and to proceed on Cañon City road.

During the time I have been in command of this department, I have made four tours of inspection.

I left Vancouver May 9, 1866, accompanied by two members of my staff, and proceeded by the way of the Columbia and Cowlitz rivers, to Monticello, W. T., and thence across the mountains to Olympia and Steilacoom. After inspecting Fort Steilacoom, proceeded to Port Townsend, Bellingham bay, and San Juan island, examined the condition of these posts, and returned to Vancouver on the 19th of May, by the same route, having been absent eleven days, and travelled a distance of six hundred and sixty miles—one hundred and twenty miles on horse-back.

On the 4th day of June, accompanied by my aide-de-camp, I proceeded by Columbia river to the Dalles, Oregon, and on the 5th, taking an escort of ten men, marched to Camp Watson, a distance of one hundred and twenty-five miles, reaching there June 10. On the 12th, taking Brevet Major Myers, with company I, 1st United States cavalry, as escort, I crossed the Blue mountains, and marched to Camp Curry, a distance of eighty-four miles, reaching there on the 16th. On the 18th we crossed the Malheur Lake valley to Silvie's river. We were unable to cross the river at this point, and were compelled to follow its course through almost impassable cañons towards its source. On the 20th the river was bridged, and the command crossed. On the 23d we camped on the east side of Malheur Lake valley. During the night the Indians drove off fifty-two pack-mules belonging to the escort. The Indians were pursued, and all of the animals except three that had been killed were recovered. On the 25th we crossed the south fork of the Malheur, and struck the Owyhee river opposite Camp Lyon. On the 30th the river was impassable at that point, and we were compelled to move up to the

Chico road, striking it July 1. We crossed the Owyhee the same day and proceeded to Camp Lyon, reaching there July 2. Distance from Camp Curry to Camp Lyon, three hundred and ten miles. Leaving Camp Lyon on the 3d, we arrived at Fort Boise, Idaho Territory, on the night of July 4, and found Major General Halleck and staff there.

The whole distance from the Dalles to the Snake river, a distance of six hundred and thirty-six miles, was made on horseback in twenty-seven days. We were frequently compelled, on account of the high waters, to head impassable cañons, and considerable time was lost in attempts to cross the rivers at different points.

On the 5th of July we left Fort Boise, and returned to Vancouver direct on the 11th. The whole time occupied by the trip was thirty-eight days. Total distance travelled, one thousand two hundred and forty-nine miles.

The route is shown on map No. 1, being marked thus: — — — — —. On the 12th of July I accompanied Major General Halleck to Fort Stevens, and the country on Puget sound. The object of the trip was the examination of points for permanent fortifications. I returned to Vancouver on the 22d of July.

On the 13th of August, accompanied by my aide-de-camp, I left Vancouver and proceeded, by way of Columbia river and Wallula, to Fort Boise, reaching there August 23, 1866. I left Fort Boise August 27, 1866, crossed Snake river 28th, moved up the river to mouth of Bruneau, and examined the country in the vicinity. Left Bruneau August 30, crossed an unknown country, struck Sinker creek, and followed it up to the mining districts of Idaho. Passed through Silver and Ruby cities September 2. Reached Three Forks of the Owyhee September 4, and took an escort of twenty men, under Brevet Major David Perry, first United States cavalry. Followed Major Marshall's trail to Camp C. F. Smith, reaching there September 6. Left there September 8, reached Camp Lyon September 10, and Fort Boise September 12. Left Fort Boise, September 13, returned to Vancouver by the same route, arriving September 19. The whole distance travelled was one thousand four hundred and sixteen miles. Time occupied, thirty-eight days. The route of this trip is shown on map No. 1, being marked thus: — — — — —.

On the 20th of August company F of the second United States artillery, under command of First Lieutenant and Brevet Lieutenant Colonel A. O. Vincent, arrived at Fort Vancouver (where it is now stationed) from department of California.

Since my return, on September 19, Captain J. H. Walker, fourteenth infantry, commanding at Camp C. F. Smith, Oregon, informs me that on September 12, he, with fourteen men of his command, made a scout to the headwaters of Trent creek; they discovered and broke up a camp, destroying large supplies of berries, seeds, provisions, &c. The Indians, twenty-five or thirty in number, became informed of their movements and escaped, leaving their fires still burning. The captain desisted from following them, as night was coming on, and he was a long distance from any aid or assistance. Fifty mounted men (infantry) are now out on a scout from Fort Klamath, Oregon, after a band of hostile Indians. Some Indian scouts have been employed at Camp Watson, and in the district of Boise. Lieutenant William Borrowe, second artillery, detailed on recruiting service, has been ordered to the Warm Springs and Umatilla reservations, to enroll the complement of the one hundred scouts apportioned to this department. Recruiting for the eighth regiment of cavalry is progressing very slowly in this department. Recruits will probably be made more rapidly as winter approaches. I think the recruiting service here has been injured by the action of the legislature of Oregon to raise volunteers for service in that State. I was consulted by Governor Woods in relation to calling out the volunteers. I expressed my disapproval of such proceeding without the sanction of the War Department, and gave it as my opinion that the general government would not defray

the expenses of volunteers called out without proper authority. The exigencies of the case do not seem to demand such action on the part of the State authorities. The class of men who would enlist prefer entering the volunteer service, and they will not enlist in the regular service so long as there is a prospect of volunteers being called into service. As soon as the organizations now in this department are filled up, and those which are expected arrive, it is believed that there will be troops enough to bring the hostile Indians to terms in a reasonable length of time. It is intended to continue operations against these Indians during the winter, and for that purpose winter camps have been established in their haunts. The troops in pursuing the Indians have, perhaps, driven them into the settlements sometimes, but this cannot be avoided. The enclosed list and map will show the locations of the different stations, and the number of troops at each, according to the present arrangement. As soon as the reports from the different scouting parties that have been out for some time are received, the result will be reported.

I have the honor to be, very respectfully, your obedient servant,

F. STEELE,

*Major General Commanding.*

Bvt. Lieut. Col. R. N. SCOTT, *Ass't Adj't General,*

*Headquarters Military Division of the Pacific,*

*San Francisco, Cal*

#### REPORT OF MAJOR GENERAL GEORGE G. MEADE.

HEADQUARTERS DEPARTMENT OF THE EAST,

*Philadelphia, Pa., October 12, 1866.*

GENERAL: I have the honor to submit for the information of the general commanding in chief the following succinct report of military operations in my command during the present year:

At the commencement of the year my command was the military division of the Atlantic, composed of the department of the east, the middle department, and the departments of Virginia, North Carolina, and South Carolina.

The only movements of any consequence were those made on the northern frontier with a view to enforce the neutrality laws. Early in April a despatch was received from the honorable Secretary of War, transmitting one from the collector at Eastport, Maine, reporting the concentration at that place of large numbers of strangers, believed to belong to the Fenian organization, and assembled with a view to organizing an expedition against the province of New Brunswick. At this time there was only one company of artillery at Eastport. I immediately ordered three additional companies from the nearest posts, and repaired myself to Eastport. On my arrival I found the collector, under the instructions of the Treasury Department, had seized a vessel loaded with arms and ammunition.

Being satisfied of the illegal character of the expedition, I confirmed the seizure of the arms, placed them in charge of the commanding officer at Eastport, and gave notice publicly that no violation of the neutrality laws would be permitted. These measures had the effect of causing the expedition to be abandoned, and the men composing it to return to their homes.

The arms seized were offered to the individual claiming them, on condition of his giving security that they would not be employed in any illegal enterprise. This offer has not as yet been accepted, and the arms are still under military custody at Eastport. On the dispersion of the expedition, the troops ordered to Eastport were returned to their former stations.



During the month of May several reports were received indicating the deposits of arms and collections of men at various points on the frontier of New York and Vermont. These reports, as received, were transmitted to Major General Hooker, commanding department of the east, with instructions to investigate them, to seize all the arms and munitions of war, where there was evidence of their being destined for illegal use, and to take all necessary measures to preserve the neutrality as far as the means within his control admitted.

On the 1st of June, while at West Point, I received official information of the crossing at Buffalo, New York, of an armed body of Fenians; at the same time information was received of the concentration of large forces in the vicinity of Ogdensburg, New York, and St. Albans, Vermont. I at once directed Major General Hooker to send all the available force in his department to the frontier, and proceeded myself to Buffalo. On my arrival at Buffalo, on the 3d instant, I found that the armed men who had crossed were captured by the United States steamer Michigan on their attempting to return the night previous, and being satisfied the movement at Buffalo was a feint, I left that place on the evening of the 3d, and reached Ogdensburg the next day, the 4th of June.

On my arrival at Ogdensburg I learned of the concentration of large forces at Malone, New York, and at St. Albans, Vermont. Finding the small force at my command inadequate to prevent a crossing, I directed my subordinate commanders to station their commands to the rear, on the main lines of travel, and issued the most stringent orders for the seizure of all arms and munitions of war, and directed the stopping and turning back of all suspected parties. These duties were successfully executed, large quantities of arms and munitions being seized at various points. No opposition was offered, except in one instance, when an armed party of Fenians seized, at Watertown, New York, a locomotive, and proceeded to Cape Vincent, and there recaptured two car loads of arms which had been sent there for security after seizure by the deputy marshal at Watertown. On learning these facts, I despatched Major J. Stewart, commanding three companies of artillery, in a special train to intercept the Fenians on their return, but the latter, learning of Major Stewart's movement, abandoned the train with the arms, and escaped by scattering over the adjacent country.

On the necessary authority being received from the War Department, and the appearance of the President's proclamation on the 6th of June, I ordered the arrest of the principal leaders at St. Albans and Malone, and issued a proclamation commanding the dispersion of the assemblages at these places, and offering transportation to their homes to such of the men as would abandon the expedition. These measures had the effect to suppress the expedition, no effort being made to cross except that of a small inefficiently armed body under a General Spear, who crossed the boundary line near Franklin, Vermont, and remained for a day on the other side in the vicinity of the line, recrossing on the advance of the British troops. The expedition being abandoned, the men returned to their homes, mostly furnished transportation by the government. This was deemed the most expedient course, for though the conduct of the men composing the expedition had, up to the time of its abandonment, been most exemplary, it was feared so large a body, estimated as high as 10,000, if left on the frontier without means of return, would become riotous and disorderly, requiring, to preserve the peace, the calling out the militia, which I was anxious to avoid on the ground of economy, as well as other reasons. After the men composing the expedition had all been sent home, the troops were returned to their former station. Brevet Major General Barry, who had been specially assigned to duty by the general commanding in chief, was, by orders from these headquarters, left in general charge of the troops remaining on the northern frontier. The report of General Barry, commanding at Buffalo, as well as that of Major Gibson, 3d artillery, commanding at St. Albans, are herewith appended.

On the 6th of August General Orders No. 59, Adjutant General's office, Washington, D. C., abolished the military division of the Atlantic, and I was assigned to the command of the department of the East. Since the date of that order there has not been any movement of troops. The troops, consisting of the 1st and 3d regiments of artillery, and six companies of the 4th infantry, are stationed from Erie, Pennsylvania, to Plattsburg, New York, on the northern frontier, and from Eastport, Maine, to Fort Delaware, Delaware, on the Atlantic coast.

A recent personal inspection of the department showed the troops to be in commendable order and condition. The distribution of regiments into one and two company posts is not, however, conducive to efficiency and discipline; and it is to be hoped the recent increase of the army authorized by law will permit of the concentration at least of regiments, so necessary to preserve the *esprit* and proper military tone of both officers and men.

Very respectfully, your obedient servant,

GEORGE G. MEADE,

*Major General United States Army.*

Brevet Major General E. D. TOWNSEND,

*Assistant Adjutant General United States Army.*

#### REPORT OF MAJOR GENERAL P. H. SHERIDAN.

HEADQUARTERS DEPARTMENT OF THE GULF,

*New Orleans, La., November 14, 1866.*

GENERAL: I have the honor to transmit herewith the report called for by the general-in-chief, in his letter to me of October 4, 1866.

I am, general, very respectfully, your obedient servant,

P. H. SHERIDAN,

*Major General U. S. A.*

Brevet Maj. Gen. J. A. RAWLINS,

*Chief of Staff, Washington, D. C.*

HEADQUARTERS DEPARTMENT OF THE GULF,

*New Orleans, La., November 14, 1866.*

GENERAL: In compliance with letter of instructions, dated October 4, 1866, I have the honor to make the following report of operations within the limits of my command since May 29, 1865:

On the 17th of May, 1865, I was relieved from command of the middle military division, and assigned to the command of all the territory west of the Mississippi and south of the Arkansas rivers, with directions to report to Lieutenant General Grant for instructions.

This territory embraced at that time within its limits the only organized rebel army left in the confederacy, which was under the command of the rebel general E. Kirby Smith, with headquarters at Shreveport, or vicinity, in the State of Louisiana.

My instructions from the Lieutenant General were to operate against this command, to break it up or destroy it. For this purpose I was authorized to draw from Major General J. J. Reynolds, commanding department of Arkansas, 12,000 men, and from Major General E. R. S. Canby, commanding the military division of West Mississippi, 25,000 men, together with the 4th and 25th army corps, and a column of from 8,000 to 9,000 cavalry, to be collected from

Louisiana, West Tennessee, Mississippi, and Alabama. The aggregate strength of this force was about 80,000 men.

On the 29th of May I assumed control of this new command, designating it the "Military Division of the Southwest," with headquarters at New Orleans, La., and at about the same time received intelligence of the surrender of E. Kirby Smith, through commissioners sent from him to Major General Canby. This surrender was made, but bore upon its face double-dealing on the part of the rebel commander or his agents, as the Texas troops had declined to surrender, and had disbanded to their homes, destroying magazines and carrying with them arms and ammunition from the different arsenals. General Smith proceeded to Galveston, and from thence escaped to Mexico, in violation of the agreement he had bound himself to observe. This conduct on his part may have arisen from the fact that it could not be concealed that his real object in offering to surrender was to get security for the Arkansas, Louisiana, and Missouri troops to return to their homes, knowing full well that the Texas troops did not intend to surrender, and that most of them had already gone to their homes; that while they were destroying their arsenals and carrying home with them their arms, it was their constant boast that they were not conquered, and that they would renew the fight at some future day.

Previous to the surrender and in anticipation of the successful escape of Jefferson Davis, and his probable arrival in the trans-Mississippi department, it had been contemplated to organize a column of 15,000 confederates at Marshall, Texas, for the invasion of Mexico. This scheme failed, perhaps from the capture of Mr. Davis. But while the main scheme of sending the 15,000 men to Mexico failed, numerous bands, squads, and parties, numbering, perhaps, 3,000 or 4,000 men, crossed the Rio Grande into Mexico.

In view of this and the troubles of our sister republic, and taking into consideration the fact that all our military projects, during the war, against Texas had been failures, and that on this account the Union people there had come to look upon the government as weak, it was determined to throw a large force into that State and along the Rio Grande border. The accomplishment of this purpose was accompanied with great labor from various causes, but it was successfully achieved.

Among the first difficulties were the inadequacy of the depot at this place for the requirements of the service to be accomplished; the absence of all mercantile marine, and the worthless character of most of the transportation held by the quartermaster's department here for the purpose of crossing the Gulf, or entering the ports of Texas; the destruction of all the wharves at the ports in Texas, with the exception of Galveston, by the confederates, and the long line of communications to the points occupied in the interior, over which supplies had to be sent; and last, but not least, the great reluctance of the troops, officers and men, to continue for a longer period in the service, they claiming that they had fulfilled their contract with the government, and that it was but just they should be mustered out.

The movement of the 13th corps had been ordered before I reached New Orleans. One division of it, under Major General F. J. Herron, proceeded to occupy the line of the Red river in Louisiana, and Marshall and Jefferson, in northeastern Texas. One division, under Major General F. Steele, was under orders for the Rio Grande line. The third division, under Major General J. A. Mower, was ordered to Galveston, from thence to occupy the line of railroad from Galveston to Brenham, while Major General Gordon Granger, who was in command of the corps, was assigned to general command in Texas.

While these movements of the 13th corps were in progress, I was rapidly collecting at Alexandria, Louisiana, a column of cavalry about 4,500 strong, to be commanded by Major General G. A. Custer, and another column at Shreveport, Louisiana, about 5,000 strong, to be commanded by Major General Wesley

Merritt. These cavalry columns were collected from different points in the States before mentioned, and were transferred up Red river by steamboats under great difficulties from the low stage of the water, were organized into divisions, equipped, supplied, and prepared to march for their respective points of destination; Merritt's division to march via Marshall to San Antonio, and Custer's division via Hempstead to Austin, Texas, the columns marching nearly parallel to each other and something like a hundred miles apart.

These columns took with them a small pontoon train to cross streams on the line of march, and for the additional object of being able to cross the Rio Grande, should the government elect to send troops in that direction.

While the movements of the 13th corps and cavalry were going on, the 25th corps was embarked at City Point, Virginia, for the coast of Texas, to occupy the points of Indianola, Corpus Christi, Brazos Santiago, and the line of the Rio Grande—most of the corps, however, being sent to the Rio Grande line. Great trouble was experienced in the landing of the troops of this corps in consequence of the bad harbors in Texas, the great draught of the vessels employed as transports, and the absence of suitable lighters to convey the troops across the bars.

While the foregoing operations were in progress, the 4th army corps, numbering about 10,000 men, with all its field transportation, arrived in New Orleans, having been ordered to report to me for service in Texas, and was transported as rapidly as possible to Indianola, from thence to Victoria, and ordered to occupy the line from that point to San Antonio.

The troops on the line from Galveston to Austin were supplied with comparative ease, as the bar at Galveston offered no very difficult obstacles. The wharves, although in bad condition, still sufficed; the railroad from Hempstead to Brenham was in condition to transfer our necessary supplies, and from Brenham to Austin there was a passable wagon road.

The landing of the troops at Indianola was difficult on account of the dangerous bar, which had to be lightered over from the transports, and in consequence of the destruction of the wharves the lightering had to be, in most cases, to the shore in small boats. Then when the troops were landed there was no water for a distance of eighteen miles, and they had to be hurried over this distance as soon as landed, and from thence to Victoria, where timber and water could be obtained in abundance. Victoria is distant from Indianola about thirty-five or forty miles. After these difficulties had been overcome it was found that the country between Indianola and Victoria was not passable for wagons in the winter, and the railroad from Lavaca to Victoria had to be repaired at much labor and some expense, else the troops would have had to come back to their supplies at Lavaca and Indianola, where there was no water. I therefore ordered the railroad repaired, and after it was in running order sold it to the company, covering the cost of repairs. The wharf at Indianola had also to be built entire, and when completed sold, to cover the expenses incurred.

But on account of these obstacles, and especially the difficulty of crossing the outer bar, which is about twenty miles from the landing, some of the transports had to return to New Orleans or the mouth of the Mississippi river for water for the troops and coal for the transports.

At Brazos Santiago the wharf had been destroyed, and many of the same difficulties occurred here, and some of the transports had also to return to New Orleans and the mouth of the Mississippi river for supplies of coal and water. The troops on this line were extended up the Rio Grande as far as Laredo, and on this line much the largest number of troops were placed. A wharf had to be built at Brazos, and at first the troops up the Rio Grande were supplied by small steamers which we had sent to that river; but the difficulties of entrance at the mouth of the Rio Grande made this line of supply very dangerous and precarious for the supply of the troops, as sometimes a transport could not cross

the bar at the mouth of the river for nine or ten days. I therefore ordered the building of a railroad from Brazos to White Rancho, on the Rio Grande river, a distance of eleven miles, and this gave security to the supply of the troops. This railroad was afterwards sold at about forty thousand dollars (\$40,000) over the actual expense of construction. All these difficulties in the movement of troops were overcome, and in a short period of time.

The effect of this large movement of troops on the destiny of imperialism in Mexico has not been fully appreciated by our people. It is, however, well known that while we were struggling for republican existence against organized rebellion, and when nearly all the heads of the governments of Europe (except Russia) wished, and did believe, that republicanism was not a success, the Emperor of the French undertook the bold expedition to subvert the republic of Mexico. There was no territorial question to be settled, and history will not excuse the attempted annihilation of a nation on the plea of non-payment of a million or two of debts due. There was no good excuse for this attempted violation of rights, and the history of imperialism in Mexico is only the history of the buccaneer Morgan on a more extended scale, who at one time captured and held Panama, on the isthmus, until he could hold it no longer. So that when this movement of our troops to Texas and the Rio Grande took place we found the line of that river and all northern Mexico in the hands of imperialism; a government which collected no taxes, had no system of government, and supported its partisans, soldiers and civilians, by levying contributions on the poor inhabitants; but the appearance of our troops and the knowledge that friends were on the border went like electricity to the homes and hearts of the Mexican people. The rebels who had escaped from our country received no sympathy, and in less than a year this hardy people, without money, without arms and munitions of war, and without supplies, have recaptured Matamoras, Camargo, Presidio de Rio Grande, Lampissas, Monterey, Saltillo, Monclova, Durango, Chihuahua, and, in fact, hold nearly all of the country, putting the invaders on the defensive and confining them to the valley of Mexico, with a fair prospect of their speedy extermination.

I have felt much interest in this event, because I have always believed that the occupation of Mexico was a part of the rebellion; and believing that the contest in our own country was for the vindication of republicanism, I did not think that that vindication would be complete until Maximilian was compelled to leave.

The course taken by nearly every newspaper in the lately rebellious States was sympathy for Maximilian, and the sentiment of a large portion of the population was likewise; and so determined was this on the part of thousands of adventurers that the Cordova emigration scheme was gotten up, and had, I think, for its object the formation of a Maximilian-American party, composed of confederates entertaining antipathy towards our government. Many of these, having no means, would have drifted into the army of Maximilian. I had to take strong grounds against this emigration, and finally broke it up by refusing to permit emigrants to embark from the sea-ports within the limits of my command.

The effect of the presence of our troops in Texas and on the Rio Grande, as alluded to heretofore, on the destiny of imperialism was great. It had not a friend among the officers or men, from the highest to the lowest grade, and the effect was depressing in the extreme—so much so that I am inclined to believe that had a demand been made for the withdrawal of the imperial troops, on the ground that the invasion of Mexico was a part of the rebellion, it would have been granted, and the miseries of that country for the last year avoided.

While the imperial troops held the line of the Rio Grande, the strictest neutrality was preserved. Since they were driven away the same honorable neutrality has been preserved towards the liberal government.



The number of troops sent to Texas was about 52,000. Shortly after they had arrived, and become somewhat settled, orders came for the muster-out of about 47,000 of this force, and the muster-out was carried on gradually, and in accordance with our ability to bring them back, so that the movement may be considered as equal to a continuous movement of over 90,000 men over the most difficult line of operations which we have in the country. I make these remarks, because I was under the impression at one time that the Quartermaster General did not fully understand the magnitude of the movement, or the natural obstacles in the way of its accomplishment, and we had to struggle for six months without funds, on the plea that the Brazos railroad was constructed without authority, and the public service made to suffer a punishment by this denial of funds. I believe the Quartermaster General was influenced in this act by the representations of incompetent inspectors sent out to make reports.

The condition of civil affairs in Texas was anomalous, singular, and unsatisfactory. I found the provisional governor, backed by a small portion of the population, had for his standard of loyalty "abhorrence for the rebellion and glory in its defeat;" while his successor, as actual governor, had for his standard of loyalty "pride in rebellion—that it was a righteous but lost cause, being overpowered by the federal forces." Both of these representatives of the civil law, entertaining opposite standards for the loyalty of their subjects, I was required to support, and did it to the best of my ability; but it has been embarrassing in the extreme. Governor Hamilton, the provisional governor, was clamorous for more troops, and in several communications to me asserted that the civil law could not be carried out; that freedmen would be killed and Union men driven from the State without military support, which I gave whenever it was possible. Governor Throckmorton, the present governor, wants all the troops moved from the settled portions of the State, asserting that the civil law was all right; that justice would be done to freedmen, Union men, and our soldiers in the courts. But justice is not done. To give you an instance of this, two soldiers were shot at Brenham, Texas, about two months ago; they were unarmed, and offered no provocation. The grand jury could find no bill against their would be assassins, but found a bill against Brevet Major Smith, seventeenth infantry, for burglary, because he broke into the house of some citizen in his attempt to arrest these men.

My own opinion is that the trial of a white man for the murder of a freedman, in Texas, would be a farce, and in making this statement I make it because truth compels me, and for no other reason.

During the last six months Indian depredations have taken place on the remote frontier. Their extent is not defined as yet, but they are not very alarming, and I think that the governor has to some extent been influenced by exaggerated reports, gotten up, in some instances, by frontier people to get a market for their produce, and, in other instances, by army contractors to make money.

I have ordered two regiments of cavalry to the frontier and placed a regiment of infantry at Austin, to be moved if necessary.

It is strange that over a white man killed by Indians on an extensive frontier the greatest excitement will take place, but over the killing of many freedmen in the settlements nothing is done. I cannot help but see this, and I cannot help but tell it to my superiors, no matter how unpleasant it may be to the authorities of Texas.

I will establish the frontier posts in Texas in the early spring. It was not done heretofore on account of having no available regular troops, and to have attempted it with volunteer troops, desirous of returning to their homes, would have involved an expense which I did not like to put upon the government.

In Louisiana there was about as much, if not more anomaly in civil affairs than in Texas.

Our depot was in New Orleans, which, from its geographical position, became

the main depot of the Gulf States, and in fact the whole southwest. This place had necessarily been the headquarters of superior commanders, and as many of them appeared to have more ability in civil than in military affairs, they left the results of that ability to be settled by myself and the subordinate officers of my command—questions and claims, semi-military and semi-civil, of every possible phase, and so numerous and complicated that, after a fair examination, I think it will require one officer and ten clerks for over twelve months to brief and systematize what is yet left.

The settlement of such of those claims as have already come up has been a dead weight upon the legitimate military duties of my command. Then there was the accumulation, at this place, of material of war of every possible character, from ocean steamships down to pick-axes and spades, the disposition of which gave great labor; but by keeping steadily to work, and by the good judgment of subordinate commanders and staff officers of the different bureaus, this depot is now reduced to the present wants of the service.

At the time of my arrival at New Orleans, as before alluded to, the civil affairs were much mixed up. Governor J. Madison Wells was legitimately holding the position of governor; but a new election was to occur in the summer or fall, and although from the antecedents of the governor, who supported the federal authority, I had reason to expect good judgment, still, either on account of the approaching election (in which he was a candidate for re-election) or because he thought it best, he was filling a number of vacancies in offices throughout the State by returned confederates. I did not know this, as it was none of my business, until I learned it by the constant appeals made to me by men who were turned out to give place to new-comers whom they did not think deserving, and I only speak of it now because it led afterwards to bitterness and shedding of blood, in which the military were to some extent involved.

The governor was re-elected and the legislature met; but it was found that the governor had one will, and the legislature had another. Each hated the other, and trouble was sure to come. Not only was the legislature in antagonism with the governor, but all, or nearly all, the subordinate civil authorities of the State were against him. Many of these he had himself appointed, if they still held over after the election. Then the governor commenced making appeals to the military authorities to support him, and when it was proper and legitimate to serve the ends of justice such support was given; but when it was to satisfy partisan or political purposes it was refused, and the military assumed the position that politics was outside of the profession, and that it could not be called on, legitimately, to serve the interests of either side. This bitter political feeling finally culminated in the massacre of the 30th of July, 1866. I have thought that had I been in the city this slaughter might have been avoided; but I did not expect it to occur, and I was led to this belief by a conversation which I had about the 1st of June last with Judge Durell, who was the president of the Louisiana convention of 1864, and who told me that he would decline to call it together. He asked if it could have military support. I said it could not; that I would not allow the military to be used for party purposes; but that if the parties in the State came into collision, it would be my duty to maintain the peace of the country, as I had believed for some time past that the safety of life and property did not rest with the civil authorities when there was any great disturbing cause.

In Florida there were no political issues involving the military authorities, although much annoyance occasionally came from arrests of officers and soldiers for acts alleged to have been committed during the rebellion. The people of Florida appeared to realize the fact that it would not make much difference to them what party was in power, and that their best interest was to take off their coats and go to work to repair the disaster of the rebellion.

On the 27th of June, 1865, the temporary military division of the southwest



was abolished by the creation of the military division of the Gulf, which included the departments of Texas, Louisiana, Mississippi, and Florida. These departments were respectively commanded by Majors General Wright, Canby, Slocum, and Foster.

On October 7, 1865, the department of Mississippi was transferred to the military division of the Tennessee.

On May 22, 1866, Major General Canby, having been ordered to Washington, was succeeded by Brevet Major General A. Baird in the command of the department of Louisiana.

I am, general, very respectfully, your obedient servant,

P. H. SHERIDAN,

*Major General U. S. A.*

Brevet Major General JOHN A. RAWLINS,

*Chief of Staff, Washington, D. C.*

#### REPORT OF MAJOR GENERAL GEORGE H. THOMAS.

HEADQUARTERS DEPARTMENT OF THE TENNESSEE,

OFFICE OF ASSISTANT ADJUTANT GENERAL,

*Louisville, Ky., November 13, 1866.*

COLONEL: I have the honor to transmit herewith a report of operations and the condition of affairs generally within my command during the present year. in accordance with instructions from your office of date October 3, 1866.

I am, very respectfully, your obedient servant,

GEO. H. THOMAS,

*Major General U. S. A.*

Brevet Colonel GEO. K. LEET,

*Ass't Adj't Gen'l, Headquarters Armies of the United States.*

HEADQUARTERS DISTRICT OF MISSISSIPPI,

*Vicksburg, Miss., October 29, 1866.*

GENERAL: In compliance with instructions from headquarters department of the Tennessee, dated October 21, instant, I have the honor to submit the following report of the operations, since I have been in command, in the late department of Mississippi, and in the present district of Mississippi, and of the condition of affairs generally in my command:

#### MILITARY HISTORY.

Pursuant to orders of his Excellency the President, I assumed command of the department of Mississippi on the 14th of November, ultimo.

Previously I had been on duty for two months in the department of Arkansas.

On assuming command I found the department divided into three districts, denominated, respectively, the northern district, the southern district, and the western district. Brevet Major General M. F. Force, with headquarters at Jackson, was in command of the northern district; Brevet Major General J. W. Davidson, with headquarters at Natchez, was in command of the southern district. After relieving Major General P. J. Osterhaus, who had been my predecessor in the command of the department, I assigned him to the command of the western district, with headquarters at Vicksburg.

I found on duty in the department the following troops :

The 26th Indiana veteran volunteers, the 5th and 6th regiments colored artillery, (heavy,) acting as infantry ; the 49th, 50th, 52d, 53d, 58th, 64th, 66th, 70th, and 108th regiments of colored infantry, and batteries C and D, 2d United States colored artillery, (light.)

The 33d Illinois veteran volunteers was in the department, but under orders to be mustered out, and the 13th Indiana cavalry had been mustered out, but the whole of the regiment had not left the department. The 33d Illinois and the remnant of the 13th Indiana were sent to their respective State rendezvous with as much despatch as possible.

At the date of my assumption of the command the troops in the department occupied the following posts : Vicksburg, Jackson, Grenada, Okolona, Columbus, Meridian, Yazoo City, Natchez, Brookhaven, Winchester, and Magnolia.

The diffusion of troops at many posts under inexperienced and negligent commanders, more especially if the posts occupied are surrounded by a considerable population of citizens, is one of the greatest enemies to efficiency and discipline. Looseness of discipline leads to many and useless conflicts with citizens, and many complaints from the latter of outrages and lawlessness on the part of the troops are the necessary consequence.

The commanding general of the military division of the Tennessee reached this place the day after I had arrived and assumed command.

After a full consultation with the commanding general (and in pursuance of his directions to concentrate the troops at the smallest number of posts compatible with the efficient performance of the duties devolved upon them, so soon as I had acquainted myself with the condition of affairs in the department) I submitted a recommendation to him to reduce the number of posts to six, which he approved. The posts suggested were Vicksburg, Natchez, Jackson, Meridian, Columbus, and Grenada. These points are centrally situated with reference both to the territory and population of the State, on highways of communication either by river or railway, whence troops could be rapidly despatched to any point at which their presence might be required. The concentration was promptly made so soon as the approval of the commanding general to the proposed arrangement had been received.

By the reduction in the number of posts the cost of supplying the troops was diminished, and the discipline, efficiency, and instruction largely promoted. To bring the troops to the highest possible state of efficiency, to enforce rigid discipline, and to prevent outrages on and unnecessary conflicts with citizens, I published orders requiring the troops to remain in their camps or cantonments when not absent therefrom on duty, and tactical instruction to be given to them twice a day, of not less than one hour at each lesson, on five days of the week. The remaining two days, Saturday and Sunday, were devoted to police and relaxation. The observance of the Sabbath was specially commended in orders. The healthful effect of these measures soon demonstrated itself in an improvement in the discipline and instruction of the troops, and in the reduction of the number of complaints by citizens of outrages by soldiers. To still further guard against the latter evil, I published an order directing that whenever it might be necessary for the military authority to intervene for the enforcement of justice or the preservation of law and order among the citizens, the commanding officer on whom the duty might devolve should give written instructions to the officer detailed to command the troops designated for any such special service, explaining fully the work to be performed, and how far military force should be used therefor ; that the officer charged with the duty should make a full written report, on the completion of the work assigned him, of his operations to his immediate commander, and that a copy of the instructions and report should be transmitted through the intermediate commanders to department headquarters, for the information of the department commanders.

Shortly after my arrival in the department I found that a fruitful source of corruption among the officers and of complaint from citizens was the improper and illegal dabbling of officers in the collection and disposition of cotton *alleged* to have belonged to the so-called Confederate States.

To correct this evil I published an order defining the relations of officers of the military service to the cotton question, and their duties therein. I explained that the duty of collecting and forwarding any cotton that had belonged to the late rebel authorities, or of any other cotton the title of which, from any cause, had become invested in the United States, had been, by an act of the supreme legislature, confined to the Treasury Department and its duly appointed agents; and that the duty of the military officials was simply, on the requisition of a duly accredited agent of the treasury, to aid in collecting and guarding the cotton claimed as the property of the paramount government as the conqueror of the rebels.

This order removed from the region of military action a potential temptation to malfeasance by officers; and in a comparatively brief period no further complaints were heard of the improper interference of military officials in the collection, movement, and disposition of cotton.

The effect of the several important orders and movements above described was to bring the troops in the department well in hand, and the department itself, generally, under thorough control.

Conformably to an order from the War Department the two companies of light artillery, colored, were mustered out of service on the 26th of December, 1865, and, shortly after, the twenty-sixth Indiana was mustered out.

In the month of January, 1866, the commanding general of the military division asked my opinion as to whether the number of troops in the department could be reduced, consistent with a due regard to the enforcement of the laws, the preservation of order, and the protection of life and property.

I replied, recommending the muster out of seven of the colored regiments, and suggested that the forty-ninth, fiftieth, fifty-third, sixty-fourth, sixty-sixth, seventieth, and one hundred and eighth be selected for that purpose. Authority was immediately received to muster out the regiments designated; but before they could be collected at the points at which the muster out was to take place an order was received from the War Department suspending the order for muster out, and directing that they be retained in the service to work on the levees of the Mississippi. Under this arrangement the regiments remained in service until some time in the month of February, but were never called for by the officer in charge of the work of repairing the levees. The order for muster out was renewed near the close of February; the work was immediately commenced, and terminated about the middle of March.

On the 15th of January Major General P. J. Osterhaus and Brevet Major Generals J. W. Davidson and M. F. Force were mustered out of the volunteer service.

Near the close of January the second battalion of the fifteenth regular infantry arrived at this place, and reported for duty in the department. It was added to the garrison of this post.

On the 1st of February I published an order abolishing the district organization, directing the post commanders to report direct to the department commander, and ordering the records of the districts to be forwarded to these headquarters. This arrangement was at once effected, and was found to work better than through the intermediate machinery of the district organization.

In the month of April an order was received directing the muster out of the remaining colored regiments in the department. The work was immediately commenced, and by the 20th of May all the colored troops in the department had been mustered out.

This left me for duty but one small battalion of regular infantry. One company was sent to Meridian, one to Jackson, and one to Natchez, to replace

the colored troops at those posts; the remaining five companies were retained at this post as a central force immediately under the control of the department commander, to be used wherever and whenever there might be a necessity therefor.

After the removal of all the public property from Meridian, the company was withdrawn from that place to Jackson, and the company at the latter sent to Grenada. The number of lawless men in the vicinity of Grenada rendered necessary the presence of a small military force there to protect the citizens from outrage. I desired also to have a company there for the purpose of trying to arrest the assassin of Lieutenant J. B. Blanding, Veteran Reserve Corps, who had been foully murdered while on duty in the Bureau of Refugees, Freedmen and Abandoned Lands, at Grenada.

To aid in the effort to arrest the murderer of Lieutenant Blanding I applied to General Stoneman, then in command of the department of Tennessee, for a company of cavalry temporarily.

The company was sent from Memphis to Grenada, and though the greatest energy was displayed by both the cavalry and infantry companies, their exertions were unavailing. And notwithstanding all the efforts I have made, not alone through the military force, but through detectives, and with the hearty co-operation of the governor of the State, it has been impossible to arrest the murderer. Who he is is very well known, but it is not known whether he is skulking in the trackless swamps of this State, or has fled to some other. The facility with which information could be communicated to him by his confederates in crime has so far rendered abortive all the efforts for his arrest. It is yet trusted that in time the author of so atrocious a deed will receive the punishment due to his crimes.

In the month of August ultimo the department of Mississippi was abolished, and the same geographical limits erected into a command, styled the district of Mississippi. The troops in the district are now posted as follows: Five companies at Vicksburg, one company at Natchez, one company at Jackson, and one company at Grenada.

The greatest possible economy has been practiced in supplying and sheltering the troops. The old quarters built by the soldiers during the war have been availed for sheltering the troops, a small amount of material only having been purchased for the necessary repairs.

Since the 2d of April last a small ground-rent has been paid for the ground necessarily occupied in Vicksburg for military purposes, but no similar disbursement is made at any other place in the State. The number of buildings necessarily used as offices in this place has been reduced to the lowest possible limit consistent with the efficient transaction of the public business, and the rent paid therefor is very moderate.

In the month of April the fortifications at Vicksburg and Natchez were, in pursuance of orders from the general commanding the army, dismantled, and their armaments shipped to Baton Rouge arsenal.

The duties of the troops since I have been in command in this State have been chiefly conservative. As the rigid administration of equal and impartial justice to all classes of citizens through the civil tribunals must in the end be the safeguard of the rights of person and property in every country not permanently under the control of martial law, I advised all classes of the community to resort to the civil courts for a redress of their grievances and to obtain their rights.

Nevertheless, all the civil functionaries of the State, whether executive or judicial, were informed, respectfully but firmly, that the State laws making discrimination between citizens on account of race or color, or that were in opposition to the laws of the United States, could not be enforced; and that all prosecutions or suits growing out of events connected with the late war were

strictly prohibited. And I am happy to record that this policy has been successful. The higher executive and judicial officers of the State have, as a rule in their actions at least, admitted the justness and propriety of this decision. As a consequence no serious conflict has occurred between the civil and military authorities. Most of the cases of suits or prosecutions prohibited by military orders or the laws of the United States, and of cases arising under the laws of the State making discriminations on account of race or color, have been adjusted either by equitable decisions in the State courts, or by transfer, under the act of Congress approved May 11, 1866, to the courts of the United States. And I think it is not going too far to say that substantial justice is now administered throughout the State by the local judicial tribunals to all classes of persons irrespective of race or color, or antecedent political opinions. It is unfortunately too true that many outrages and crimes have been committed by the vicious and criminal on the weak, and that these crimes have in many cases gone unpunished. But when it is remembered what a terrible social, political and military convulsion the nation passed through in the war of the rebellion, when it is borne in mind that a vast population of slaves was suddenly emancipated by the violence of war, and that the late slaves now occupy as freed people the very same soil, in the closest juxtaposition to the formerly dominant class, on which the two races lived in the relation of master and slave, it should not perhaps be matter of surprise that so many outrages and crimes occur and go unpunished, but rather matter of marvel that so few occur.

Great social and political changes are not made in a day. Time, the potential lethe of deep-rooted, long-standing prejudices, and diffused education, the mighty elevator of the human race, must accomplish the great reforms necessary to the permanent prosperity of the white and colored inhabitants of the southern States.

In December last, his excellency the governor of the State applied to me to consent to a general disarming of the negroes through the militia, in conformity with the State statute prohibiting that class of persons from bearing arms without a special license to do so. The reason assigned for the proposition to disarm the negroes was the apprehension of a negro insurrection. Believing there was no foundation in fact for the apprehension of an *emence* of the negroes, and entertaining the sincere conviction that the State law prohibiting them from bearing arms was unjust and unconstitutional, I declined to give my assent to the proposed measure. I informed the governor, however, that I would submit his request, through the proper official channels, to his Excellency the President, for his orders in the premises. The President's decision sustained the position I had taken. His orders were communicated to the governor of the State; and the latter, at my request, issued an order to the militia of the State not to attempt to enforce the State statute prohibiting the negroes from bearing arms.

In this connection I will record that the governor of the State has, throughout the whole of my administration of military authority in this State, heartily co-operated with me in all my efforts for the complete restoration of law, order, and prosperity among the people, and for the enforcement of strict and impartial justice to all classes.

#### THE FREED PEOPLE.

When I assumed command in this State I found the labor question, the most important element of prosperity in an agricultural country, entirely unsettled. The freed people, the former laborers, and the only reliance for the immediate supply of the great desideratum, *labor*, were restless, unquiet, and indisposed to make arrangements for continuous labor; and the white population, especially that portion desirous of engaging in cultivating the soil, depressed, despondent,



and hopeless of securing sufficient labor to whiten the alluvial fields of the Mississippi valley once more with the great staple, cotton.

After taking sufficient time to inform myself of the position of affairs and to survey the whole field, I suggested to Brevet Brigadier General Samuel Thomas, the then assistant commissioner of the Bureau of Refugees, Freedmen and Abandoned Lands for this State, to issue a circular address to the freed people, *advising, not requiring* them to enter into contracts to labor for the ensuing year.

This suggestion, according with General Thomas's convictions of the necessities of the situation, was conformed to, and on the 31st of December last the proposed address was issued and widely circulated. The freed people were advised to this course, not because of the existence of a State statute requiring them to make contracts to labor for a year without they had a license to do job-work, under the penalty of being treated as vagrants without such contract or license, (for it was announced that the enforcement of this statute would not be allowed,) but because by entering into the contracts they would secure employment, a support, and homes for a year. Moreover, by entering into written contracts, made in duplicate and duly authenticated before a civil magistrate, the freed people would have in their possession the evidence for the enforcement of their rights and just claims in the local courts against delinquent employers. It was believed this means of securing justice to the freed people would be particularly efficacious in the rural districts, remote, by reason of geographical distance and diffusion, from the sphere of the immediate surveillance of the military officials. Still further, the freed people, under the information and influence of designing and incendiary persons, had been drugged into the belief that the paramount government would, on the approaching Christmas or New Year's day, divide among them the lands and other property of the country. It was hence necessary to impress them with the sublime truths that freedom is not licentiousness; that it does not mean the right to do nothing and be supported by charity, whether national or individual; and that it is the duty of every human creature, possessed of the capacity, to work for his or her own support.

The beneficial effect of the address was soon apparent. Complaints from persons wishing to employ negroes to labor for the year, that they would not enter into labor contracts, were soon heard no more.

And I will here express my deliberate judgment that the contract system is the best, both for the employer and the employed. This conviction is derived from the close observation and minute experience of the operations since I have been in command in this State. It is true I have received some complaints from employers that their hired freed people have not worked well; on the other hand, I have received complaints from the freed people that they were defrauded of their wages; but the opinion is hazarded that these complaints, whether coming from employers or employed, constitute exceptional cases, and that the grand bulk of employers and employed have, to the profit of both parties and the advantage of the whole country, honestly and faithfully acknowledged the sacredness of the obligations of their contracts, and fairly carried out the stipulations of the same. It is therefore suggested that the negroes be advised to continue the contract system till they are able to purchase or lease land.

In the latter part of April General Samuel Thomas was relieved from duty as the assistant commissioner of the Bureau of Refugees, Freedmen and Abandoned Lands in this State, and I was ordered to perform the duties of that office. The opinion is ventured that the consolidation of the duties of the military commander and the assistant commissioner in the hands of the same person for one State or geographical military command is a wise arrangement, and will be found to be promotive of the public interest.

Several of the statute laws of this State in reference to the negroes are very



objectionable. I will specially designate a few that seem to be most open to objection.

The statute makes the negro a competent witness in all cases in which one or both of the parties litigant are negroes; it therefore fully protects the rights of the negroes. But if both the parties litigant in any case are white persons, the negro is not a competent witness. Since the negro is a competent witness, either for the prosecution or defence, in cases in which a white person is either plaintiff or defendant and the other party a negro, no reason can be perceived why the colored person should not be a competent witness when both parties are white persons. It is true this statute does not injure the rights of person or property of the negroes, but it does work great injury and inconvenience to the white inhabitants. As the law now stands the negro can use the testimony of the members of the colored race, as also the evidence of white people, in all cases in which his rights are in litigation; but in matters of litigation between two white persons neither of the parties can use negro testimony, though it may be the only evidence available in the case. A white person can use the testimony of the negro only in case a negro is a party to the suit.

The statute prohibiting the colored people from bearing arms, without a special license, is unjust, oppressive and unconstitutional. One of the courts of the State has decided the law to be unconstitutional, while another has maintained its constitutionality.

The law prohibiting the negroes from purchasing or leasing real estate except in corporate towns or cities is impolitic and unconstitutional. The effect of it is to drive the negroes, in large numbers, into the towns, where they suffer from idleness, vice, and disease; whereas if they were allowed to acquire homes in the country, they would become useful, contented, and happy laborers. The constitution of this State, as amended in 1865, invests the negroes with the right to acquire and hold property without any qualification or limitation as to the kind or character of the property. It is hence impossible to perceive what authority the legislature of the State possesses to limit this constitutional boon. Moreover, this statute conflicts directly with the undoubted constitutional right of every citizen, whether white or black, to alienate every species of property he owns, whether real or personal, in any way, or to any other person, without distinction of color, that may be agreeable to the interest or disposition of the proprietor.

The statute requiring all negroes to make a contract, on or before the 10th day of January of each year, or to obtain a license to do job work, is unjust, oppressive, and unconstitutional.

The Constitution of the United States, as well as the constitution of this State, prohibits forever slavery or involuntary servitude.

If the negroes are required by a statutory enactment to obtain a license to do job work, make a contract to labor for the year, or be exposed to arrest, fine, and imprisonment, it would seem the constitutional gift is not much more than a name.

It is trusted that subsequent legislation will remove these objectionable acts from the statute book, or that they will become obsolete.

A slow but gradual amelioration of feeling and abatement of prejudice toward the negroes are observable among the white population of the State.

#### THE CROPS.

The soil-products in this State for the current year are almost a total failure. The spring, even to the commencement of the summer, was wet, cold, and unpropitious. The summer was excessively dry and fiercely hot. The excessive heat withered, hopelessly, the corn crop, and injured the cotton. The worm, the most fatal of all the enemies of the cotton plant, made its appearance in the latter part of the summer and early autumn, and mercilessly ravaged the cotton fields.

The most reliable information in my possession goes to show that the corn grown in the State will not feed the people until the 1st day of January, and that the cotton made will not repay the cost of production. The people have not the breadstuff to support them until another crop can be made, nor the money to buy it with. But bread they must have. Whence is it to come? Abundance has crowned the agricultural labor of the great northwest during the present year. Thence, it would seem, the supply must be drawn, either by private charity or government bounty, or both, to relieve the coming want of this people.

#### NATIONAL CEMETERIES.

Negotiations have been concluded for the site of a national cemetery near Vicksburg, and the preliminary steps have been taken to secure a site for a similar purpose near Natchez. Already the work of removing the bodies of the soldiers who fell in the defence of the country to the former site has been commenced, and will be pushed as rapidly as the means at disposal will permit; but the small sum allowed for the removal of the bodies and for the preparation of the cemetery makes the work necessarily slow.

It is respectfully suggested that, as many of the graves of the soldiers who were buried near the margin of the Mississippi river are being obliterated and destroyed by the fluvial changes, abundant means should be at once allowed for the work of preparing the cemeteries and removing the bodies to their final resting place.

The State, and especially this city, was visited by a severe epidemic of cholera in August and September.

I have briefly sketched the leading events of my administration of this command, and attempted to present a faithful picture of its general condition.

The stated reports of my staff officers to the chiefs of staff bureaus at military division and department headquarters, hitherto regularly made, have furnished information of the minute administration of affairs.

I have the honor to be, general, very respectfully, your obedient servant,  
TH. J. WOOD,

*Bvt. Major General U. S. Army, Commanding.*

Brevet Brigadier General W. D. WHIPPLE,

*A. A. G. and Chief of Staff, Department of the Tennessee.*

#### HEADQUARTERS MILITARY DISTRICT OF KENTUCKY, *Louisville, Kentucky, 1866.*

SIR: In compliance with instructions from headquarters department of the Tennessee, I have the honor to transmit the following report of the operations of the military forces under my command in this State since assuming command of the department of Kentucky, April 24, 1866, in obedience to Special Orders of the War Department No. 172, dated April 16, 1866:

The military force in the department, on the date of my assuming command, consisted of eight (8) companies of the second United States infantry, the twelfth United States colored heavy artillery, and the one hundred and nineteenth United States colored infantry; the two latter regiments under orders for muster out of service. The disbandment of these regiments was accomplished by the first of May, leaving but eight (8) companies of the second United States infantry within the limits of the State subject to my command. These troops were stationed as follows: one company at Camp Nelson—a few days afterwards, on the breaking up of this post, it was ordered to Lexington, where it has remained since; two companies at Jeffersonville, Indiana, guarding public property and

buildings at that place; the remaining five (5) companies in the city of Louisville, performing guard duty at the different headquarters, guarding public buildings and property.

About the middle of July a detachment of recruits sufficient to reorganize the two companies, necessary to fill up the regiment to ten (10) companies were received; and the companies reorganized at this place.

About the middle of June the department of Kentucky was abolished, and the State of Kentucky reduced to a district command. The necessary reduction of my staff, clerks, orderlies, &c., was promptly made; a proportionate reduction of quarters was also immediately made. In obedience to orders from the War Department, dated in the early part of June, I assumed the additional duties of assistant commissioner of the Bureau of Refugees, Freedmen and Abandoned Lands, relieving Brevet Brigadier General John Ely, Veteran Reserve Corps, who had for some months past been in charge of the bureau affairs in this State.

Since the union of the bureau duties with the military under the district commanders the management and operations of both are so nearly connected that I have thought it but in order, to give the commanding general a more comprehensive report of the affairs, to append to this in full my report of the operations of the bureau recently made and forwarded to the Commissioner at Washington; it is attached and respectfully submitted.

During the succeeding few months a more tranquil state of affairs existed in Kentucky than the State had probably enjoyed for some years past, but as the political contest progressed considerable bitterness of feeling sprang up between the contending parties. The election, however, generally passed off quietly. The party known as the rebel sympathizers carried the State in August last by a large majority, electing men, in most cases, to office whose sympathies were known to have been in favor of the rebellion throughout the war, and in many instances returned rebel soldiers were elected.

Bands of "guerillas" and "negro regulators" soon increased in numbers and audacity, and many lawless acts have been perpetrated by them upon the defenceless and unoffending citizens, both white and black. The increase of robbery and lawlessness, and the ineffectual measures taken by the civil authorities to suppress these bands, rendered it my duty to offer to the citizens more protection from the military than I had before found necessary.

In Gallatin and surrounding counties these bands became so formidable and bold in committing their robberies that I was compelled to send, about the 1st September last, a company of troops to Warsaw, also Bowling Green and Paducah, for the protection of the people. These troops still occupy their camps at these places, and judging from the present state of affairs it will be necessary to continue their presence there.

From these posts small detachments of men are sent out as necessity requires to protect the agents of the bureau, and make arrests of desperadoes. I have allowed no arrests of citizens to be made except where it was manifest that the civil authorities failed or refused to take action, and then only on affidavits previously taken showing conclusively the identity and guilt of the parties. All parties arrested up to this date except five have been turned over to the civil courts for trial after a few days' imprisonment; these five prisoners have been in confinement only a few days, are now awaiting the demand of the United States marshal to be so turned over. These parties have generally been turned over to the United States district court of this State, the only court in the State within my knowledge that will admit the testimony of colored witnesses against accused white parties. For further particulars on this subject I would respectfully refer to the accompanying report of the bureau affairs. [See General Howard's report.]

The general health of the troops has been good; the discipline and efficiency all that could be expected or desired under the circumstances.

The most important post within the district is the city of Louisville; this has been well and efficiently commanded by Brevet Brigadier General Sidney Burbank.

My staff has been so much changed by muster-out of service and other causes that it is difficult to give a detailed account of the duties performed by them.

It affords me pleasure to report that these duties have been well and promptly performed.

Very respectfully, your obedient servant,

JEF. C. DAVIS,  
*Brevet Major General Commanding.*

General W. D. WHIPPLE,  
*Assistant Adjutant General.*

#### REPORT OF MAJOR GENERAL D. E. SICKLES.

HEADQUARTERS DEPARTMENT OF THE SOUTH,  
*Charleston, South Carolina, October 30, 1866.*

I have the honor to report the operations and general condition of affairs in this department during the present year, in compliance with the order of the General-in-Chief.

The troops in the department of South Carolina, on the 1st of January, 1866, comprised 352 officers and 7,056 enlisted men. By the muster-out of volunteer organizations this force was reduced on the 1st of June last, when the department of South Carolina was discontinued, to 200 officers and 2,973 enlisted men.

I assumed command of the department of the Carolinas, including the States of North and South Carolina, June 2, 1866, in compliance with General Order No. 32, War Department, dated May 19, 1866. The troops in the department of the Carolinas comprised 169 officers and 3,277 enlisted men. On the 17th day of August, 1866, I assumed command of the department of the south, embracing the same territory and troops included in the department of the Carolinas. The 128th United States colored troops was mustered out October 10, 1866. The troops now comprise the 6th and 8th regiments of United States infantry; companies A, H, I, and L, 5th United States cavalry; light company E, 3d regiment United States artillery, and 37th regiment United States colored troops. Total number of commissioned officers, 135; enlisted men, 2,612.

The 6th United States infantry and four companies of the 8th, with companies H and L, 5th United States cavalry, and three companies 37th United States colored troops, garrison twelve posts in South Carolina; and six companies of the 5th United States infantry, companies A and I, 5th United States cavalry, light company E, 3d United States artillery, companies A, B, D, F, G, I, and K, 37th regiment United States colored troops, garrison the several posts in North Carolina.

Depots for recruits for the 40th United States infantry have been established at Smithville, North Carolina, and Charleston, South Carolina. Enlistments are going on satisfactorily.

Pursuant to General Order No. 32, War Department, Adjutant General's office, 1866, the States of North and South Carolina, respectively, constitute military commands, Brevet Major General J. C. Robinson, United States army, commanding in North Carolina, and Brevet Major General R. K. Scott, commanding in South Carolina, each performing the duties of assistant commissioner of the Bureau of Refugees, Freedmen, &c., within his command.

The discipline and efficiency of the troops is generally fair, most of the enlisted men of the regular force being recruits. Desertions have been quite numerous for several months, but are now less frequent. (Report of Major James P. Roy, 6th United States infantry, acting assistant inspector general, Appendix 1.)

The troops are well equipped and clothed, and comfortably quartered. But few complaints have been reported of the issues made by the quartermaster's and subsistence departments, and these have been promptly corrected. (Reports of the chief quartermaster, Brevet Major General R. O. Tyler, and of the chief commissary of subsistence, Brevet Brigadier General W. W. Burns, Appendix 2 and 3.)

The health of the troops has been excellent; the sick in hospital averaging only four per cent. of the mean strength of the command, and the ratio of deaths per thousand men being only 3.68. No case of yellow fever or cholera has occurred, nor have these epidemics appeared in the department; a remarkable result, attributable mainly, in my judgment, to the effective quarantine maintained, in compliance with General Order No. 15, headquarters armies of the United States. (See report of medical director, Appendix 4.)

Large reductions have been made in the expenditures of the quartermaster's department. The estimates reported for January, 1866, were \$258,794 17, and for August, 1866, \$54,076 06.

In January, 1866, in the department of South Carolina, eleven steamers, five tugs, and one sailing vessel were more or less employed. On September 1, the water transportation had been reduced to one steamer and three sailing vessels; two of the sailing vessels were chartered for quarantine purposes, and have been since discharged.

The depots at Hilton Head, belonging to the quartermaster, subsistence, and medical departments, have been broken up, and the civilian employes, more than a thousand in number, discharged. Orders recently received for the disposition of the large accumulation of ordnance and ordnance stores at that post are being executed with diligence by the ordnance officer and chief quartermaster.

The depots at Raleigh and Columbia have likewise been discontinued. Charleston and Newbern are now the only sources of supply.

The cemeterial operations, necessarily suspended during the warm season, will be resumed next month, and prosecuted with energy to completion during the winter, so that all the offices of honorable interment, as contemplated by the government, will have been rendered to those of our heroic dead who fell during the war in North and South Carolina.

For more particular information as to these and other operations of the quartermaster's department I respectfully refer to the report of Brevet Major General Tyler, enclosed herewith, to whose zeal and ability I am much indebted.

The issues of rations to refugees and freedmen subsequent to January 1, 1866, were gradually diminished under the operation of orders from department headquarters forbidding issues to persons able to earn a living. The demand for labor during the year has been sufficient to employ every one willing to work. Agents of the Freedmen's Bureau, in some localities, issued rations improvidently. Over issues made by those agents I have no direct control.

In compliance with the recent instructions of the Secretary of War, Bureau of Refugees, Freedmen and Abandoned Lands, Washington, August 22, 1866, all issues to freedmen and refugees ceased on the 1st of October, except to the sick in hospitals and orphans in asylums heretofore established. For the ten days ending October 10, 2,034 rations were issued to those two classes in North Carolina, and in South Carolina 1,090 rations. The legislature of South



Carolina, during its recent extraordinary session, made a liberal appropriation for the supply of corn to the destitute.

The most satisfactory progress seems to have been made during the past year in all that concerns the welfare of these States. A year ago civil authority did not exist. The duties of the executive were in the hands of provisional functionaries appointed by the President. These have been replaced by governors elected by the people. The courts were all closed, and the administration of justice depended altogether on military tribunals. Now the courts are all open, and the jurisdiction of military tribunals, except on the sea islands, is confined to persons in the military service, in cases arising under the Articles of War. The administration of municipalities, towns, and counties devolved upon military officers. The police of Charleston, Columbia, Raleigh, and Wilmington was exclusively military. The taxes imposed, the streets that were lighted, the licenses granted, and all the regulations of commerce and trade, were subject to military authority. Now the local magistrates and officials chosen by the people, or appointed according to law, are discharging their ordinary duties. The police is almost exclusively municipal. All taxes, assessments, and charges of every kind are levied by civil authorities, and all restrictions upon commerce, trade, and intercourse, other than those imposed by the laws, have ceased.

In the condition of the colored population the same gratifying progress has been observed. The act of emancipation has been ratified constitutionally by the spontaneous assent of these States. The legislature of South Carolina has recognized the civil rights of freedmen as defined by the civil rights bill. In North and South Carolina the courts are open to freedmen for the protection of person and property. In South Carolina they are competent to testify in all cases, without disqualification on account of color, *interest, or relation to the subject-matter*. Their dwellings, schools, churches, and societies are generally unmolested and secure. They are free to cultivate the soil for themselves, or to engage in any lawful calling, or to hire for wages, as they may choose. And it is only just to declare, as the result of my observation, that the conduct of the colored population has deserved all praise, and justifies the belief that as freemen they will become reliable, worthy, and useful citizens. Conspicuous among the better tendencies of the race is their respect for religion. Devoted to their churches and preachers, they habitually attend divine service and engage with singular earnestness in all religious observances. The belief is almost universal among the freed people that their deliverance from servitude was the act of God.

The situation at the commencement of the agricultural year, which begins in the south about the first of January, was full of difficulties. Many of the planters had not obtained possession of their lands. Those who were in possession had little or no money. Plantation buildings, fences, implements of husbandry, and stock could only be partially restored. The negroes generally had been led to hope that the government would give them the lands and premises where they had been domiciled as slaves; hence they were unwilling to make engagements to work for others. With the restoration of civil authority, they apprehended injustice and oppression at the hands of their former masters. They were anxious to acquire lands for themselves. They desired especially to live somewhere under the exclusive jurisdiction of the federal authority. Thousands found their way to the sea islands and the abandoned coast plantations, under the impression that General Sherman's field order gave these lands altogether and exclusively to the freed people. They were not disposed to work for the owners to whom lands had been restored, for they had been encouraged to believe that they could rightfully stay and cultivate the abandoned lands of which they had taken possession.

In South Carolina the legislation of 1865 failed to quiet the uneasiness and



distrust of the freed people as to the security of their civil rights. The discussions in Congress and in the public journals, and the language of many public agents, kept alive the hope of receiving grants of lands from the government.

All these circumstances contributed to make the colored people restless, migratory, and indolent, producing general discontent and frequent collisions between the two races. Grave disorders becoming more and more frequent, I published a comprehensive order defining the principal relations between the whites and the freed people, and establishing regulations concerning the occupation of lands, labor, pauperism, vagrancy, disorderly conduct, and crimes. (General Order No. 1, January 1, 1866, department of South Carolina, Appendix 5.) These regulations at least furnished positive and uniform rules for the government of all concerned, and contributed to establish order where all had been uncertainty and confusion.

The results were immediate and salutary. The planters evinced a disposition to employ as many hands as their means allowed. The freedmen generally went to work. Their desire to wander from place to place and to crowd together in towns and cities diminished. The facilities for travelling which had been improvidently furnished by the agents of the Freedmen's Bureau, were curtailed by orders to the quartermaster's department to confine transportation strictly to the provisions of General Order 138, War Department, Adjutant General's office, 1865. The misgivings of many planters as to the disposition of free negroes to work for wages gradually gave way. It soon became evident that with proper energy, capital, patience and tact on the part of the landholders, if they failed to make good crops, the failure would neither result from the lack of available hands nor from the omission of the military authorities to exert a proper influence upon the laboring population. (General Order 75, department of South Carolina, Appendix 6.)

And now, at the close of the year, I do not hesitate to affirm that where the season has been favorable, wages liberal, facilities for culture ample, the superintendence diligent and judicious, and the laborers well treated, the average production has been equal to ordinary years before emancipation. "*Whenever the planters wish the thing to succeed, it is successful.*" This remark, quoted from the report of the Marquis of Sligo, colonial governor of Jamaica in 1835, is as truly applicable to these States as it could have been to the British West Indies after emancipation.

On the first of January last the control of civil affairs in the city of Charleston was turned over to the mayor and municipal authorities, with certain temporary reservations; these related mainly to the trial and punishment of negroes and the prohibition of the quasi military organization and equipment of the police, as it existed before emancipation.

Desiring to relieve the people from all unnecessary restraints incident to martial law, I directed, on the 4th of March last, that the administration of civil affairs in all the parishes and towns be remitted to the civil authorities, when duly appointed and qualified according to law, and prohibiting thereafter any military tax, assessment, or charge of any kind, except fines and penalties imposed by provost courts or military commissions for offences whereof the party had been duly convicted. Civil officers have been required in all cases to obey the proclamation of the President, the laws of Congress, and all orders relating to the government of this department, emanating from competent authority. No disqualification for office has been imposed except the refusal or neglect to take and subscribe the amnesty oath last prescribed, unless the party belonged to one of the classes excepted from amnesty, and in such cases full pardon from the President is required. Provost courts have been necessarily continued in operation, with jurisdiction in cases concerning persons of color, until such persons became legally competent to sue and testify in the State courts, with the

same rights and remedies accorded to other persons. (General Order No. 7, department of South Carolina, March 4, 1866, Appendix 7.)

Contemporaneously with these measures, the muster-out of the volunteer force, and the general improvement in the condition of affairs rendered it expedient and practicable to discontinue the military district and sub-district organization, and to establish posts embracing, territorially, several counties. These have been garrisoned by one or two companies, from which mounted detachments and patrols could be furnished when required, post commanders reporting directly to department headquarters. This organization was continued until the assignment of Generals Robinson and Scott to the military commands of North and South Carolina. I desired also that post commanders should be *ex officio* agents of the Freedmen's Bureau, reporting in that capacity to the assistant commissioner; and so far as this suggestion has been adopted, the gain to the public service and to the interests of all concerned has been manifest. In my judgment, all the legitimate duties of the Freedmen's Bureau can be more efficiently and promptly performed by post commanders, who will have not only the necessary authority, but also the means and the facilities at their disposal to enforce their orders. The administrative and economical advantages are obvious enough.

The superior courts, the local magistracy, and the town and municipal authorities have generally shown a proper disposition to do justice between man and man and to afford protection to all good citizens. Unfortunately, however, there are exceptions to be made to this statement. In some parts of Barnwell, Edgefield, Newberry, Chester, Laurens, and Richland districts, (counties,) in South Carolina, a freedman has little security for life, limb, or property, apart from the presence and protection of a garrison of United States troops. There are other districts in the western part of South Carolina where the same insecurity exists. The truth is, that in certain localities of these States, personal encounters, assaults, and difficulties between citizens, often resulting in serious wounds and death, have for years occurred without the serious notice or action of the civil authorities; and in those neighborhoods where it has heretofore seemed to the population officious to arrest and punish citizens for assault upon each other, they can hardly be expected to yield with any grace to arrests for assaults and outrages upon negroes. It is precisely in these localities that the most impatience is displayed at the presence of a garrison, because people who have long violated civil law with impunity dislike martial law or any other law that is enforced.

In consequence of the vigilance of the garrisons and the punishment which has followed the perpetration of outrages upon refugees and freedmen, when the guilty parties became known to the military authorities, these crimes are now generally committed by bands of outlaws and marauders, composed of the most reckless and abandoned characters, organized mainly for plunder and pillage. There is reason to believe that organizations of these banditti, more or less numerous, and connected with each other, exist in the localities I have mentioned, and have their accomplices with corresponding organizations in the border counties of Georgia, Tennessee, and North Carolina. They defy the civil authorities; they overawe the well-disposed population. They often elude the garrisons, because it is impossible to obtain from the people in the neighborhood of their depredations or of their resorts any reliable information about them. Even the colored people generally prefer to evade inquiries rather than expose themselves to certain vengeance as the penalty of disclosures that would cause the arrest and punishment of one or more of these confederated bands. His excellency the governor of South Carolina, who has endeavored, by means of rewards *privately offered*, to effect the arrest of some of these offenders, has succeeded in capturing one or two of them, and they are now in the hands of the civil authorities awaiting trial.

In July last a party of guerillas, disguised as blacks, rode into the county

town of Newberry, dismounted, tied their horses, and proceeded to the house of one Amos Wesley, a colored barber, who resided near the court-house; they killed him in the presence of his wife and family, mounted their horses, and rode off. No arrests were made at the time, and the ringleaders are still at large, although several of them are known to the civil authorities. Wesley had wronged no one, and seems to have been an inoffensive person, although, perhaps, somewhat indiscreet in speech. He had, however, been warned to leave Newberry, and it appears he intended to move somewhere as soon as he could find a suitable place for his calling. The officer sent to investigate the affair arrested two persons as accomplices in the crime, but the evidence was not deemed sufficient to justify their detention. (Report of Major Everton, aide-de-camp, Appendix 8.) All the papers in the case have been furnished to his excellency the governor of South Carolina, in compliance with his request, for his information and action.

Two or three weeks ago a party of men, similarly disguised as blacks, went to the residence of Mr. Biglow, a teacher of a school for colored children in the town of Aiken, in Barnwell district; displaying weapons and threatening his life, they compelled him to leave the place, never to return, under pain of death. Mr. Biglow was requested to return by the post commander, and was assured of protection, but declined to do so, fearing he could not, without more hazard than he was willing to incur, resume his avocation in Aiken. This place has long been a favorite summer resort for invalids and for people of wealth and refinement in the South. It is the headquarters of a military post, garrisoned by company H, fifth United States<sup>ca</sup> cavalry. Brevet Major Walker, United States army, the post commander, has exerted himself with zeal and diligence to obtain sufficient testimony to justify the arrest of the perpetrators of this outrage, and although, as he reports to me, they are well known to the neighborhood and suspected by himself, it has been as yet impossible to obtain reliable testimony on the subject. The civil authorities have taken no action in the case, so far as I am informed. (See report of Brevet Brigadier General B. P. Runckle, agent of Freedmen's Bureau, and report of Brevet Major L. Walker, United States army, commanding post, Appendix 9.)

It sometimes happens, indeed, that arrests are made of the worst class of offenders, and occasionally they are tried and punished. Instances of much gravity are too frequent, however, of the most reprehensible neglect to arrest and prosecute notorious malefactors and outlaws. Inquests in case of homicide, especially if the victim be a negro, seldom result in a verdict which points out the guilty. When arrests are made by military authority and the parties turned over to the civil tribunals, the accused are generally admitted to easy bail. The sittings of the superior courts only occur twice a year, so that justice is slow at best. It became necessary, therefore, to authorize commanding officers to treat these outlaws as guerillas, and punish them summarily. On the 12th of October the commanding officer of the post of Chester, in compliance with General Order No. 15, current series, department of the south, turned over the jail to the sheriff, and also the custody of the prisoners, several of whom had been confined on charges of the most serious character. The sheriff was admonished by Brevet Major Carter, United States army, commanding, of the desperate character of some of the inmates, and of the necessity for vigilance, but, on the second night after the sheriff had taken possession, all the prisoners escaped. It being apparent that no reliance could be placed on the sheriff, I have communicated the occurrence to his excellency the governor of South Carolina, and directed the post commander to resume possession of the jail, capture the escaped prisoners if possible, and hold them in military confinement until the proper judicial tribunal shall be ready to try them.

The orders of the General-in-Chief, General Order 44, headquarters of the

army, Adjutant General's Office, July 6, 1866, directing the arrest of offenders and their detention in military custody, in cases where the civil authorities fail, neglect, or are unable to arrest and bring offenders to trial, have been strictly and vigilantly enforced. These orders have had the effect of stimulating the action of the civil authorities, especially in certain localities notorious for the insecurity of person and property.

Since the organization of the courts of the United States in North and South Carolina, respectively, all cases of admiralty jurisdiction, and all other proceedings, civil or criminal, of which those courts have cognizance, have been remitted to them. No complaint or suggestion has reached me from any quarter of any failure of justice in those tribunals. North Carolina having, in all trials, civil or criminal, except the crime of rape when charged against a negro, extended the laws of the commonwealth impartially to all persons, without distinction on account of color or race, jurisdiction of all cases, whether civil or criminal, with the exception just now mentioned, has been remitted to the ordinary civil tribunals of the State. The distinguished officer commanding in North Carolina reports that he finds, "in most parts of the State, a willingness on the part of civil officers to aid the military commanders in bringing criminals of all colors to justice, and generally giving all classes their just rights." General Robinson, however, remarks that "petitions from loyal men throughout the State, setting forth grievances and stating they are being prosecuted for acts done in their military capacity and while protecting loyal persons," have been received by him; and he reports that, "in all cases clearly ascertained, the executive officers of judicial circuits have been notified to discontinue such prosecutions."

Approving of the action of the district commander, I have directed in such cases, in compliance with General Order No. 3, War Department, Adjutant General's Office, January 12, 1866, that all parties within the provisions of that order be protected from any penalties or damages that may have been or may be adjudged against them in the courts of North Carolina.

In South Carolina I directed, in June last, that all white civilians in military custody charged with felonies or misdemeanors be turned over to the civil magistrates and tribunals of the State for trial, according to the nature and character of the offence charged, and of the jurisdiction of the court having legal cognizance thereof. Serious doubts having been entertained whether in prosecutions of white persons for offences against freedmen the latter would be deemed competent witnesses in the State courts, I requested his excellency the governor to submit the question to the chief justice of the court of appeals, who replied, the governor concurring, that the courts of general sessions always had cognizance of offences committed by white persons against the person or property of freed persons of color; and that, under the provisions of the law of 1865, persons of color became competent to testify before grand juries, magistrates, and courts, in criminal cases, touching the person or property of persons of color. The laws of South Carolina had not, then, placed the freed people upon an equal footing, in the courts, as parties; and, therefore, cases in which they were concerned remained, temporarily, within the exclusive jurisdiction of military tribunals. (Special Order No. 19, department of the Carolinas, Columbia, June 26, 1866, Appendix, 10; also letter of instructions to Brevet Major General R. K. Scott, commanding in South Carolina, dated Charleston, August 31, 1866, Appendix 11.)

In September his excellency the governor of South Carolina convened the legislature in extraordinary session, when laws were passed substantially recognizing the civil rights of the freed people, as those rights are defined in the civil rights bill passed by Congress. This concession gave all people of color the same remedies for wrongs and the same protection enjoyed by the most favored citizen. Their competency to sue and to testify in all cases, to make contracts,



and to hold, convey, or bequeath property, whether real or personal, has been expressly recognized in South Carolina. (Correspondence between his excellency the governor of South Carolina and the major general commanding, Appendix 12; also copy act legislature of South Carolina, Appendix 13.)

These laws having been officially communicated to me, I have directed that all cases, civil or criminal, in which the parties are civilians, be turned over to the State tribunals, that the jails and prisons be restored to the sheriffs, and that military probost courts be discontinued, except on the sea islands, where provisional tribunals cannot for the present be superseded, inasmuch as civil authority has not yet been organized and established. A large portion of the territory of these islands remains under the control of the Bureau of Abandoned Lands, Freedmen, &c., and of the United States tax commissioners, pursuant to the legislation of Congress at the last session. (General Order No. 15, Headquarters Department of the South, October 15, 1866, Appendix 14.)

The courts throughout the department have been interdicted from entertaining prosecutions or suits against persons for acts done by competent military authority; or against any one who adhered to the Union during the rebellion, for acts done in opposition to rebel forces and agents; or for the possession and use of abandoned lands or other property held by authority of the President or any civil or military department of the government.

In remitting to civil authority the comprehensive jurisdiction for some time exercised under martial law, the occasion was deemed a proper one to enjoin upon the freed people their duty to yield unhesitating obedience to the civil laws and magistracy, and also to commend to the authorities and inhabitants in general the considerate, forbearing, and patient execution of the laws in all matters concerning the numerous population so recently vested with civil rights and the obligations of citizens. Considerations affecting public tranquillity and order suggested the expediency of prohibiting whipping as a punishment for men and women, and likewise the sale of persons convicted of vagrancy and other offences for periods of involuntary service. (Correspondence between his excellency the governor of South Carolina and the major general commanding, Appendix 15.)

Under the operation of the legislation and the general orders to which allusion has been just made, the superior courts have held their autumnal term. The adherents to the cause of the Union, the partisans of the rebellion, northern men domiciled here since the war, the slaveholders of former times, and the freedmen of this epoch, have all found themselves within the cognizance of the courts. White men have been convicted of crimes upon negro testimony; negroes, tried upon charges preferred by white persons, have been acquitted upon negro testimony. In one instance the acquittal turned upon the evidence of the accused, a freedman, in his own behalf, the testimony of accused persons, when offered by themselves, having been made competent by recent legislation in South Carolina.

It would be premature, as yet, to assume that the new order of things in these States is no longer an experiment. Nevertheless, among the numerous matters of complaint disposed of during the year, the cases are exceptional and inconsiderable in number that seem to furnish just occasion for censorious comment or criticism upon the manner in which the civil authorities, and especially the superior tribunals, have fulfilled their novel relations to the freedmen as citizens.

It has been already intimated that justice is administered by the superior courts in these States with a conscientious respect for law and a degree of independence of popular sentiment not generally found among the inferior magistrates or ministerial officers. The magistrates are often dilatory in issuing warrants for the apprehension of offenders, if public opinion incline towards the accused. Nor are the sheriffs and constables likely in such cases to be diligent in making arrests. Inquests by coroners, when freedmen have been killed, have

seldom pointed to the guilty party. In an instance reported by the post commander at Hilton Head, that occurred in Beaufort district, the perpetrators of the homicide were on the coroner's jury and joined in the verdict that the victims came to their death by means to the jury unknown. Such also was the verdict in Wesley's case, at Newberry, although the murderers were recognized on the spot and were well known to the neighborhood.

These irregularities do not occur where persons of consideration are sufficiently interested in the proceedings to insist upon the proper action. The governors, unfortunately, have no control over any of these officers. They are amenable for official misconduct, it is true, to indictment and trial by a court; but in the absence of executive control it may be assumed that for practical purposes there is no responsibility. District and post commanders are instructed to report the refusal or neglect of any magistrate, court, or officer to perform any official act required by law, whereby due and rightful protection to person and property shall have been denied.

In conclusion, the following general observations are suggested by a review of the operations and the condition of affairs during the year in this department:

The military occupation of the territory by detachments garrisoning posts embracing one or more counties has restored order, afforded security for person and property, and encouraged the resumption of agricultural, industrial, and commercial employments. For the necessary garrisons and the detachments required to make the post organization efficient throughout the department, three battalions of infantry and three squadrons of cavalry, with four companies of artillery for the forts and permanent works, will be sufficient.

Notwithstanding the gravity of some exceptional occurrences incident to the close of a long war, tranquillity and order have been restored under martial law, contemporaneously with successive concessions of jurisdiction to civil authority, and the gradual reduction of the army to a peace establishment.

In certain localities disturbed by bands of outlaws, many of them fugitives from justice in these and other States and paroled rebel soldiers, who continue to commit the worst crimes and disturb the peace of neighborhoods, the exercise of the power of arrest and punishment under martial law is the only reliable security for life and property. The civil authorities fail to suppress these organizations and punish the outrages committed. Magistrates, constables, jurors, and witnesses, residing far from a garrison, are intimidated by threats of retaliation from enforcing the ordinary legal remedies against these bandits and guerillas.

The material prosperity of these States, injured almost irreparably by the war, seems likely to be restored through emancipation. Although some time must elapse before their productions will be equal in quantity to the product before the war, the increased value of the staples raised will soon make up the equivalent. Capital, enterprise, and population are coming from the north. With these will be provided increased facilities for culture, manufactures, and trade. Remarkable success has rewarded many diligent and judicious planters, who have paid liberal wages in cash and treated their laborers kindly. Evidence accumulates to prove the general disposition of the negroes to work voluntarily and faithfully for wages, or for themselves as tenants and as small proprietors. Education, the enjoyment of their earnings, the security of family ties, the possession of civil rights, and the practice of Divine worship are exerting their salutary influence upon the conduct, intelligence, and thrift of the freed people. The two races, alienated by war and suddenly separated by emancipation, are becoming gradually reconciled.

There are good reasons for the belief that the fortunate exemption of this department from the riots and turbulent collisions which have occurred elsewhere is attributable in the main to the prohibition of all armed organizations, whether



of police, patrols, "regulators," or militia. The organization of an efficient police and constabulary in the several towns and counties has been uniformly encouraged, and the troops have always supported the civil authority in the execution of the laws and in the preservation of order whenever the employment of armed forces has been necessary and proper. The lawful enrolment of the militia has not been prevented; but while the United States forces occupy the territory no occasion is likely to arise for the services of any other armed force. To illustrate the inconvenience that would be incident to the operations of outside military organizations not under my command, I invite attention to the following extract from the militia law of South Carolina, passed December 21, 1865, and which does not differ essentially, I understand, from the legislation of adjacent States :

Section 123. "That *every commissioned officer in the militia shall have power*, when occasion shall require, *to assemble, arm, and raise any number of men* belonging to their respective corps; and, if need be, to give notice and call to their aid the officers and men of any adjacent corps to *disperse, suppress, kill and destroy*, take or subdue any pirate, sea-rover, or other enemy, who shall in a hostile manner hurt, or attempt to hurt, any of the inhabitants of this State, or their persons or possessions, or *any company of freedmen or others who shall be lurking in any suspected place where they may do mischief.*"

The employment of any armed force in the manner authorized by this statute would be sure to provoke serious collisions between the two races, and more especially until the distrust and alienation out of which such enactments have their origin shall have yielded to the better sentiments of co-operation and concord. (Copy report to Adjutant General of the army, 29th September, 1866, Appendix 16.)

The armed bands called "Regulators" have no formal sanction from any authority, and are only countenanced by ill-disposed persons. These bands have committed repeated acts of hostility against the United States forces, and many depredations and outrages upon the persons and property of peaceable citizens. The instructions and orders given in such cases have been to capture and punish such offenders summarily as guerillas, pursuant to General Order No. 90, War Department, May 11, 1865.

In certain counties, such as Newberry, Edgefield, and Laurens, so much countenance was given to outrages upon refugees and freed people, directly and indirectly, by the indifference of the civil authorities, and by the population, who made themselves more or less accomplices in the crimes, that other and more comprehensive measures became necessary. I invited some well-disposed citizens of consideration and influence to proceed to those localities, and endeavor to arouse the people to a proper sense of their responsibility for these disorders. Brevet Colonel Alexander Moore, aide-de-camp, with an escort of cavalry, proceeded, by my order, to the localities where the offences had been committed, and arrested a number of the parties, some of them prominent citizens, who had harbored and given aid and comfort to the worst offenders.

These remedies not proving to be effectual, I caused it to be made known to the inhabitants of Edgefield, Newberry, and Laurens that measures had been initiated to remove the persecuted refugees and freed people inhabiting these counties to places of refuge and security, and to subsist them until they could provide for themselves; and that unless all just occasion for complaint against the population of those counties ceased forthwith, these measures would be taken at the expense of the communities responsible for grievances that seemed to defy all other modes of redress. Instructions of this purport having been sent to Brevet Major General Ames, commanding the western district, and the tenor of them having been communicated to his excellency the governor, the improved condition of affairs subsequently observed in these counties made it practicable to postpone the execution of these measures indefinitely. (Copy instructions

to Brevet Major General Ames; copy communication to his excellency the governor of South Carolina; copy reports of Captain Coan, aide-de-camp, and of Colonel Deveraux, assistant commissioner of Bureau Refugees, Freedmen and Abandoned Lands, and other documents; Appendix 17.)

It has likewise been found necessary to prohibit associations or assemblages composed of persons who served in the rebel armies, and having for their object the perpetuation of any military or other organization engaged in the rebellion. This prohibition has not been enforced against any society which has, in good faith, confined its action to the charitable relief of disabled and indigent survivors, and the ordinary observances for the burial of the dead. (General Orders No. 7, Department of the South; Appendix 18.)

Recently a meeting of one of these associations was made the occasion for an address delivered by General Wade Hampton, in which he is reported to have commented upon the government and the armies of the United States, and especially upon the operations of Generals Sherman and Sheridan, in a manner well calculated to incite discontent and hostility against the authorities of the United States. I have directed an inquiry into the matter, in order that the association of rebel soldiers may be suppressed, and General Hampton admonished to observe the terms of his parole, if, upon investigation, it shall appear to have been disregarded in this instance.

I desire to express my hearty appreciation of the efficient aid I have received from the distinguished officers commanding in North and South Carolina, and from the post commanders, in the discharge of the novel and difficult duties incident to the exercise of military authority during the gradual transition from martial to civil law. The officers of my staff, in their several departments, have evinced the most praiseworthy zeal and diligence

Very respectfully,

D. E. SICKLES,  
*Major General Commanding.*

ASSISTANT ADJUTANT GENERAL,

*Headquarters Armies of the United States, Washington, D. C.*



# ANNUAL REPORT

## OF THE

# ADJUTANT GENERAL OF THE ARMY

## FOR

## THE YEAR 1866.

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ADJUTANT GENERAL'S OFFICE,  
*Washington, October 20, 1866.*

SIR: On the 31st day of May, 1865, the regiments of the regular army, as authorized by law, consisted of—

	Companies.
Six regiments of cavalry, each of 12 companies .....	72
Five regiments of artillery, each of 12 companies .....	60
Ten regiments of infantry, composed each of one battalion of ten companies, and nine regiments of infantry, each of three battalions of eight companies .....	316

Owing to the draft upon the country for volunteers and consequent difficulty in recruiting for the regulars, as well as the employment of regular officers in higher commands with the volunteers, there were at the date above mentioned one hundred and fifty-three companies not organized.

As soon as the disbanding of the volunteer regiments was commenced, a new impetus was given to the regular recruiting, and the unorganized companies were very rapidly filled and assigned to stations to replace disbanded volunteers, and were all completed by the middle of July, 1866.

By the act of July 28, 1866, "to increase and fix the military peace establishment," the regular regiments were composed as follows :

	Companies.
Ten regiments of cavalry, each of twelve companies .....	120
Five regiments of artillery, each of twelve companies .....	60
Forty-five regiments of infantry, each of ten companies .....	450

Of these, two regiments of cavalry and four of infantry are composed of colored men ; and four regiments of infantry of men who have been wounded in the line of their duty while serving in the army of the United States.

Immediately on the passage of the act the necessary orders were issued detailing officers to recruit.

One new regiment of white cavalry was assigned to the Pacific coast, and recruiting for it directed to be immediately commenced. At this date recruits enough to form one-half the number of companies have been raised in California and sent from the depot at Carlisle. The remaining six companies will be recruited on or before the end of November.

The second new regiment of white cavalry was assigned to Lieutenant General Sherman's division of the Missouri, and its ranks were wholly recruited by the 15th of September, 1866. It is now at Fort Riley, Kansas.

Of the fifty-four companies required to convert into regiments of ten companies

each the battalions of the nine three-battalion regiments, thirty have already been organized and sent to their regiments. At the past and present rate of recruiting, every company in the army will be brought to its proper standard of strength by the 10th of November, 1866, and this would have been accomplished at a still earlier date but for interruptions in movements of detachments, occasioned by prevalence of the cholera in parts of the country through which they must pass *en route* to their stations.

Of the four Veteran Reserve regiments, to be composed of men who have been wounded, one has been assigned to the department of Washington, one to the department of the East, one to the department of the Lakes, and one to the department of the Tennessee. These men will be usefully employed in furnishing guards and watchmen to storehouses, public cemeteries, &c., clerks and messengers to public offices, and in such other duties as their physical strength will permit.

Of the colored regiments, one of cavalry and one of infantry were assigned to the division of Lieutenant General Sherman; one of cavalry and two of infantry to the department of the Gulf, under Major General Sheridan, and one of infantry, to be raised on the Atlantic coast, under superintendence of its colonel. The orders for recruiting these regiments were framed so as to avoid interference with contracts that had been made by freedmen for labor, and contemplated the enlistment of as many of those who were serving in colored volunteer organizations as were willing to continue in the army. To save time volunteer officers were detailed to collect recruits without waiting for the issue of appointments to those who were to be commissioned for them. The success in recruiting these regiments has been greater in Louisiana and Texas than elsewhere, but an early organization of the entire force is confidently expected.

The strength of companies, as now authorized by law, is a minimum of fifty privates, which may, at the discretion of the President, be carried up to a maximum of one hundred privates in the cavalry and infantry arm, and to one hundred and twenty-two privates in the artillery arm. For the present sixty-four privates has been fixed as the standard for all companies, except the ten batteries of light artillery, which require and are allowed one hundred and twenty-two.

This will make the strength of the army 54,302, rank and file, susceptible, by law, of increase to 75,382, rank and file.

The reported strength on the 30th of September was—

Of regiments.....	*37, 545
Of recruits in depot.....	1, 000
Total.....	<u>38, 545</u>

The above statement does not include the one thousand Indian scouts authorized by section six of the act approved July 28, 1866. Of these, six hundred were authorized to be raised by Lieutenant General Sherman for his division, two hundred by Major General Halleck for the division of the Pacific, and two hundred by Major General Sheridan for the department of the Gulf.

By the annexed table (B) it will be seen that from October 1, 1865, to October 1, 1866, 36,674 recruits were enlisted for the regular army. This branch of the service has been most efficiently conducted under the superintendence of Colonel William B. Royall, and his successor, Brevet Brigadier General W. N. Grier, for the cavalry arm, and of Brevet Major General Cooke, and his successor, Brevet Major General Butterfield, for the artillery and infantry.

As soon as the ranks of the army are well filled, it is intended to place restrictions upon the recruiting service, in order to diminish the number of men

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\* See Table A.

received, so that it will correspond to the number required to keep up the strength of regiments as they become reduced by casualties. This will be done by raising the standard of qualifications as to height, age, &c., which will at the same time improve the materiel of the army.

Soon after the passage of the army bill a new assignment was made of geographical divisions and departments. The present arrangement is as follows :

*Division of the Missouri*—composed of the departments of the Arkansas, the Missouri, the Platte, and Dakota—Lieutenant General Wm. T. Sherman, commanding ; headquarters, St. Louis, Missouri.

*Division of the Pacific*—composed of the departments of California and of the Columbia—Major General Henry W. Halleck, commanding ; headquarters, San Francisco, California.

*Department of the East*—headquarters, Philadelphia, Pennsylvania, Major General George G. Meade, commanding—embracing the New England States, New York, New Jersey, and Pennsylvania, and Fort Delaware, Delaware.

*Department of the Lakes*—headquarters, Detroit, Michigan, Brigadier and Brevet Major General Joseph Hooker, commanding—embracing the States of Ohio, Michigan, Indiana, Illinois and Wisconsin.

*Department of Washington*—headquarters, city of Washington, Brigadier and Brevet Major General Edward R. S. Canby, commanding—embracing the District of Columbia, Alexandria and Fairfax counties in Virginia, the States of Maryland, and Delaware except Fort Delaware.

*Department of the Potomac*—headquarters, Richmond, Virginia, Brigadier and Brevet Major General John M. Schofield, commanding—embracing the States of Virginia except Alexandria and Fairfax counties, and of West Virginia.

*Department of the South*—headquarters, Charleston, South Carolina, Major General Daniel E. Sickles, commanding—embracing the States of North and South Carolina.

*Department of the Tennessee*—headquarters, Louisville, Kentucky, Major General George H. Thomas, commanding—embracing the States of Kentucky, Tennessee, Georgia, Alabama, and Mississippi.

*Department of the Gulf*—headquarters, New Orleans, Louisiana, Major General Philip H. Sheridan, commanding—embracing the States of Florida, Louisiana and Texas.

*Department of the Arkansas*—headquarters, Little Rock, Arkansas, Brigadier and Brevet Major General Edward O. C. Ord, commanding—embracing the State of Arkansas and Indian territory west.

*Department of the Missouri*—headquarters, Fort Leavenworth, Kansas, Major General Winfield S. Hancock, commanding—embracing the States of Missouri and Kansas, and the Territories of Colorado and New Mexico.

*Department of the Platte*—headquarters, Omaha, Nebraska, Brigadier and Brevet Major General Philip St. G. Cooke, commanding—embracing the State of Iowa, the Territories of Nebraska and Utah, so much of Dakota as lies west of the 104th meridian, and so much of Montana as lies contiguous to the new road from Fort Laramie to Virginia City, Montana.

*Department of Dakota*—headquarters, Fort Snelling, Minnesota, Brigadier and Brevet Major General Alfred H. Terry, commanding—embracing the State of Minnesota and all of the Territories of Dakota and Montana not embraced in the department of the Platte.

*Department of California*—headquarters, San Francisco, California, Brigadier and Brevet Major General Irvin McDowell, commanding—embracing the States of California and Nevada, and the Territory of Arizona.

*Department of the Columbia*—headquarters, Portland, Oregon, Major General Frederick Steele, commanding—embracing the State of Oregon and Territories of Washington and Idaho.

The regiments of the regular army are distributed to stations as follows :



*Department of the East.*

First regiment of artillery, 10 companies.  
 Third regiment of artillery, 10 companies.  
 Fourth regiment of artillery, 3 companies.  
 Fourth regiment of infantry, 7 companies.  
 Forty-second regiment of infantry, 10 companies.

*Department of the Lakes.*

Fourth regiment of artillery, 1 light battery.  
 Fourth regiment of infantry, 3 companies.  
 Forty-third regiment of infantry, (Veteran Reserves,) 10 companies.

*Department of Washington.*

Fifth regiment of cavalry, 3 companies.  
 Fourth regiment of artillery, 7 companies.  
 Twelfth regiment of infantry, 10 companies.  
 Thirtieth regiment of infantry, 10 companies.  
 Fortieth regiment of infantry, recruiting in Washington.  
 Forty-fourth regiment of infantry, (Veteran Reserves,) 10 companies.

*Department of the Potomac.*

Fifth regiment of cavalry, 1 company.  
 Fifth regiment of artillery, 1 light battery and 4 companies.  
 Eleventh regiment of infantry, 10 companies.  
 Twentieth regiment of infantry, 10 companies.  
 Twenty-first regiment of infantry, 10 companies.  
 Twenty-ninth regiment of infantry, 10 companies.

*Department of the South.*

Fifth regiment of cavalry, 4 companies.  
 Third regiment of artillery, 1 light battery.  
 Sixth regiment of infantry, 10 companies.  
 Eighth regiment of infantry, 10 companies.

*Department of the Tennessee.*

Fifth regiment of cavalry, 4 companies.  
 Second regiment of infantry, 10 companies.  
 Fifteenth regiment of infantry, 10 companies.  
 Sixteenth regiment of infantry, 10 companies.  
 Twenty-fourth regiment of infantry, 10 companies.  
 Twenty-fifth regiment of infantry, 10 companies.  
 Thirty-third regiment of infantry, 10 companies.  
 Thirty-fourth regiment of infantry, 10 companies.  
 Forty-fifth regiment of infantry, (Veteran Reserves,) 10 companies.

*Department of the Gulf.*

Fourth regiment of cavalry, 12 companies.  
 Sixth regiment of cavalry, 12 companies.  
 Ninth regiment of cavalry, 12 companies.  
 First regiment of artillery, 2 light batteries.  
 Fifth regiment of artillery, 6 companies.  
 First regiment of infantry, 10 companies.  
 Seventh regiment of infantry, 10 companies.

Seventeenth regiment of infantry, 10 companies.  
Twenty-sixth regiment of infantry, 10 companies.  
Thirty-fifth regiment of infantry, 10 companies.  
Thirty-ninth regiment of infantry, 10 companies.  
Forty-first regiment of infantry, 10 companies.

*Department of the Arkansas.*

Fifth regiment of artillery, 1 light battery.  
Nineteenth regiment of infantry, 10 companies.  
Twenty-eighth regiment of infantry, 10 companies.  
Thirty-seventh regiment of infantry, 10 companies.

*Department of the Missouri.*

Second regiment of cavalry, 2 companies.  
Third regiment of cavalry, 12 companies.  
Seventh regiment of cavalry, 12 companies.  
Fourth regiment of artillery, 1 light battery.  
Third regiment of infantry, 10 companies.  
Fifth regiment of infantry, 10 companies.

*Department of the Platte.*

Second regiment of cavalry, 10 companies.  
Third regiment of artillery, 1 light battery  
Thirteenth regiment of infantry, 10 companies.  
Eighteenth regiment of infantry, 10 companies.  
Twenty-seventh regiment of infantry, 10 companies.  
Thirty-sixth regiment of infantry, 10 companies.

*Department of Dakota.*

Tenth regiment of infantry, 10 companies.  
Twenty-second regiment of infantry, 10 companies.  
Thirty-first regiment of infantry, 10 companies.

*Division of the Missouri.*

Tenth regiment of cavalry, 12 companies.  
Thirty-eighth regiment of infantry, 10 companies.

*Department of California.*

First regiment of cavalry, 8 companies.  
Eighth regiment of cavalry, 12 companies.  
Second regiment of artillery, 2 light batteries and 6 companies.  
Ninth regiment of infantry, 10 companies.  
Fourteenth regiment of infantry, 10 companies.  
Thirty-second regiment of infantry, 10 companies.

*Department of the Columbia.*

First regiment of cavalry, 4 companies.  
Second regiment of artillery, 4 companies.  
Twenty-third regiment of infantry, 10 companies

The fifteen military bands provided for in section 7, act of July 28, 1866, have been assigned as follows :

West Point, New York.	Jefferson Barracks, Missouri.
Fort Columbus, New York harbor.	Fort Leavenworth, Kansas.
Fort Adams, Rhode Island.	Little Rock, Arkansas.
Richmond, Virginia.	New Orleans, Louisiana.
Fort Monroe, Virginia.	San Antonio, Texas.
Charleston, South Carolina.	Harbor of San Francisco, California.
Louisville, Kentucky.	Fort Vancouver, Washington Territory.
Nashville, Tennessee.	

#### VOLUNTEER SERVICE.

The entire management of this branch of the duties of this office has continued under the immediate charge of Brevet Brigadier General Thomas M. Vincent, assistant adjutant general.

The number of volunteers borne on the returns of armies, military divisions, and departments, on the 1st of May, 1865, was reported at 985,516. Subsequent to that date the number of white and colored troops taken up on the returns was 48,548, which, added to this first, made the entire number to be mustered out 1,034,064.

The number 48,548 was made up as follows :

State troops .....	5, 844
First corps.....	3, 008
Veteran Reserve Corps ..	734
Colored troops.....	14, 038
United States volunteers .....	995
Volunteers for old and new organizations in rendezvous.....	10, 938
Volunteers and drafted men en route to commands and not joined....	6, 524
Forces in transit dropped from returns of one command, and necessarily not taken up on that of the one for which destined.....	6, 467
Total.....	<u>48, 548</u>

#### MUSTERS OUT OF SERVICE.

The last annual report of the Adjutant General brought down the operations of the department in mustering out the volunteer army to the 15th November, 1865, at which date 800,963 had been discharged.

The following is a statement of the numbers mustered out up to the dates set opposite them, showing the rapidity with which the work was continued after that time :

January 20, 1866.....	918, 722
February 15, 1866.....	952, 452
March 10, 1866.....	967, 887
May 1, 1866.....	986, 782
June 30, 1866.....	1, 010, 670
November 1, 1866.....	1, 023, 021

Leaving in service 11,043 volunteers, colored and white.

The following were the orders issued to complete the series necessary to take out of service all the remaining volunteer forces mentioned in the foregoing statement, amounting to 233,101 :

*December 11, 1865.*—All white troops in the departments of Georgia, Alabama, and Mississippi, leaving the aggregate force—including regulars—in the said departments 7,000 men.

*December 30.*—All volunteers in the department of the East, all in the Middle department except 1,500, and all in the department of Virginia except 2,500.

*December 30.*—All troops in the military division of the Tennessee whose terms of service would expire in February, 1866, and, in addition, the force in the department of the Tennessee to be reduced to 4,000 men.

*December 30.*—The force of white troops in the military division of the Gulf to be reduced to 10,000 men, and the force of black troops to 10,000.

In case of the public interest not warranting so great a reduction, the figures indicated to be approached as nearly as possible.

*January 9, 1866.*—All volunteer troops in the department of Virginia.

*March 15.*—The force of colored troops in the military division of the Tennessee, so as to leave for the respective military departments as follows :

Kentucky.....	2 regiments.
Tennessee.....	4 regiments.
Georgia.....	1 regiment.
Alabama.....	2 regiments.
Mississippi.....	4 regiments.

*March 15.*—All colored troops in the department of South Carolina except one regiment.

*March 15.*—All colored troops in the department of Florida except one regiment.

*March 15.*—All colored troops in the department of Washington except one regiment.

*March 15.*—All colored troops in the military division of the Mississippi except four regiments.

*April.*—All volunteers, both white and colored, in the military division of the Tennessee ; this under discretionary authority given the commanding general of that division.

*May 18.*—All remaining white volunteers in the military division of the Gulf, department of North Carolina and department of South Carolina.

*July 11.*—All the remaining officers and men of the 1st army corps, (Hancock's.)

From time to time, as the troops could be dispensed with, thirty-nine regiments in addition to the foregoing were ordered to be mustered out.

The movement homeward commenced May 29, 1865, and had it been possible to spare all the volunteers in service, the entire number, 1,034,064, could easily have been disbanded and returned to their homes within three months from that date.

The annexed table (marked C) shows the whole force mustered out since May 1, 1865, properly classified.

The *recruitment* of white volunteers was under the exclusive control of the Adjutant General, from the first call for troops until May 1, 1863, when it was placed under the Provost Marshal General, who, being by law charged with the enrolment and draft, was charged also with enlistment, that the entire recruiting service for white volunteers might be under one head.

The regulations framed by this office for volunteer recruiting service remained in force with but slight modifications during the war.

The re-enlistment of veteran volunteers in the field and the recruitment of all colored volunteers was under the direction of the Adjutant General.

The following statement shows the numbers recruited under his direction :

Militia (3 and 9 months') from April 15, 1861, to May 1, 1863 . . . .	195, 921
Volunteers from May 3, 1861, to May 1, 1863 . . . . .	1, 149, 719
Veteran volunteers re-enlisted in the field, 1863-'64 . . . . .	138, 251
Colored troops during the war . . . . .	169, 624

Total . . . . . 1, 653, 515  
 making about two-thirds of the whole number furnished during the war..

The subject of *organizing* volunteer troops was under the charge of the Adjutant General throughout the war. This involved—

1. The establishing and management of the general depots or rendezvous in the several States for collecting and instructing recruits.

2. The care of all recruits (including those enlisted under the Provost Marshal General's Bureau) after arrival at general depot.

3. The organization of the recruits, if for new commands, into regiments and companies.

4. The forwarding of all troops, new organizations and detachments of recruits for old ones, to the field.

5. The muster-in of commissioned officers and enlisted men for all organizations already in the field, and for those serving not in the field, but under the control of commanding generals of departments. This important duty, in which many difficult questions arise, upon the solution of which depends the commencement of pay, or date of rank, required at times a corps of two hundred commissaries and assistant commissaries of musters, or one commissary for each military geographical division and department, and each army, and one assistant for each division of troops.

6. The mustering out and discharging all volunteers and militia, and returning them to their homes.

Table D, giving two classifications—one by States, the other by calls—shows the number of new organizations organized and forwarded to the field, under direction of this office, during the war.

#### PROVOST MARSHAL GENERAL'S BUREAU.

Pursuant to the provisions of section thirty-three of the "Act to increase and fix the military peace establishment of the United States," approved July 28, 1866, the bureau and office of the Provost Marshal General of the United States were discontinued on the 28th of August, and by General Orders No. 66, War Department, Adjutant General's Office, August 20, 1866, all business relating in any way to the Provost Marshal General's Bureau, or the raising of troops, with all the accounts and claims connected therewith, of whatever character or date, or whensoever incurred, were transferred to the Adjutant General of the army, to whom all the records, papers, funds, and property were turned over. The Adjutant General was authorized to retain such officers and clerks as were required, and directed to reduce the force from time to time as it could be done without detriment to the public service. The regulations and orders framed for the Provost Marshal General's Bureau, in so far as they were applicable, were continued in force.

The transfer under these orders having been duly made, the business of the bureau was consolidated into the "Enrolment" and "Disbursing" branches of the Adjutant General's office.

The enrolment branch is charged with answering calls for information from the Second Auditor, Pension Office, Paymaster General, State and local authorities, and with miscellaneous business. In addition to this, the work of consolidating and transferring the names of all men drafted into the service of the United States during the rebellion, into books especially prepared and arranged

by States and districts, has been commenced, so that reference for information may be made easy. The number of names to be thus transferred is 776,829.

The disbursing branch is charged with all disbursements from the fund for "collecting, drilling, and organizing volunteers," and the "enrolment and draft fund;" also the business relating to all accounts and claims of whatever character or date, or whensoever incurred, connected with the raising of troops during the war.

Accounts relating to the current expenses of the mustering and disbursing offices in the respective States, such as rent, clerk hire, postage, telegrams, &c., are paid by chief mustering and disbursing officers from a limited supply of funds kept in their hands for that purpose.

All other accounts are forwarded, after a full examination by the chief mustering and disbursing officer, with his remarks and recommendation, and, if proper, are paid by the disbursing officer connected immediately with this office.

Of the records, those relating to the Veteran Reserve Corps and deserters have been merged into the "Roll and Return Division" of this office.

The medical branch was duly transferred, by order of the Secretary of War, to the charge of the Surgeon General of the army, with the view of complying with the requirements of the act approved July 28, 1866, in regard to the publication of the medical statistics of the Provost Marshal General's Bureau.

Prior to the transfer of the duties, the Provost Marshal General had consolidated offices, and reduced the force of his employés to the lowest limit consistent with the present prompt transaction of the public business.

Offices under the direction of a chief mustering and disbursing officer were continued at the following places:

State.	Station.	For what States, &c.
Vermont.....	Brattleboro' ...	Vermont.
Massachusetts ..	Boston .....	Massachusetts, Maine, New Hampshire.
Connecticut ....	Hartford .....	Connecticut, Rhode Island.
New York .....	Albany .....	New York.
Pennsylvania ..	Philadelphia ..	Pennsylvania, New Jersey.
Maryland .....	Baltimore .....	Maryland, Delaware.
Ohio .....	Columbus .....	Ohio, West Virginia.
Indiana .....	Indianapolis...	Indiana.
Kentucky .....	Louisville .....	Kentucky.
Illinois .....	Springfield ....	Illinois.
Missouri .....	St. Louis .....	Missouri, Kansas, Dakota, Colorado, and Nebraska.
Iowa .....	Davenport .....	Iowa.
Minnesota .....	St. Paul .....	Minnesota.
Wisconsin .....	Madison .....	Wisconsin.
Michigan .....	Detroit .....	Michigan.
Tennessee .....	Nashville .....	Tennessee.
New Mexico ...	Santa Fé .....	New Mexico.
California .....	San Francisco.	California, Nevada, Oregon, and Washington Territory.

Measures have been adopted to obtain an accurate knowledge of the condition of the business in the respective States and Territories, with the view of closing all these offices at the earliest date it can be done without detriment to the public service, and collecting all the valuable papers and records at the seat of government, where they will be filed in proper manner for future reference.

The Provost Marshal General's report of the operations of his bureau, dated March 17, 1866, renders unnecessary reference in more detail to its business now under this office.

No appropriation of money will be required for this branch during the next fiscal year.



## COLORED VOLUNTEERS.

For all information in relation to colored volunteer troops, I beg leave to refer to the annexed report of Brevet Colonel C. W. Foster, assistant adjutant general of volunteers, who organized and has continued in charge of that branch of the duties of this office.

In addition to the distinctive branches already referred to, there are four others immediately connected with this office, as follows :

1. The subject of commissions under Brevet Brigadier General J. C. Kelton, assistant adjutant general. This branch embraces the preparation and issue of all letters of appointment and commissions to officers appointed by the President, and their accurate registry ; the regulating of proper succession and promotion of officers ; preparation of orders of promotion and army registers of ordnance sergeants, hospital stewards' and sutlers' warrants ; the solution of numerous questions of rank and of pay depending on dates of appointment and acceptance of commission, and of questions of organization of the army under acts of Congress. Some little idea may be formed of the scope of this class of duties by the fact that over ten thousand commissions, brevets and other, have been issued since November 1, 1865, for regular and volunteer officers.

2. The preparation and distribution of all special orders, the measures for apprehension and trial of deserters, the miscellaneous correspondence with general and staff officers of the regular and volunteer army, and regimental officers of the regular army, relating to leaves of absence, changes of station, &c., and the recruiting service for the regular army, details of which have been given above, have been under the immediate direction of Brevet Brigadier General Robert Williams, assistant adjutant general, who has arranged the detail and assignment of recruiting officers, the drawing of requisitions for funds to supply them, the assignment and forwarding of detachments from depots to regiments, the preparation of instructions to superintendents, and the correspondence with officers concerning accounts, returns, &c.

In addition to these duties, on the transfer of Brevet Brigadier General Nicholas, assistant adjutant general, to the headquarters, division of the Missouri, General Williams was charged with correspondence on miscellaneous subjects such as relate to reports of generals, claims, &c., which involves the investigation of all matters of a general nature upon which reports are to be made to the War Department and general-in-chief, and with the proper filing of letters received.

3. Brevet Brigadier General Samuel Breck, assistant adjutant general, is charged with the preparation and distribution of all books of military regulation and instruction which are used in the army, and of all blank forms for muster-rolls, returns, &c. ; with the custody and correction of returns, enlistments and muster-rolls, showing the strength and military history of every soldier, together with the numerous questions requiring patient and laborious examination, and voluminous correspondence touching all that relates to soldiers, such as answering inquiries from the accounting, pension, and pay offices, and from relatives ; removing charge of desertion ; settling claims for horses lost ; discharge of minors, &c. ; the arrangement and care of old records collected from commands broken up, and the preparation, under a special act of Congress, of a register of every volunteer organization received into the United States service during the rebellion.

4. Brevet Colonel H. C. Wood, assistant adjutant general, is charged with the preparation of all orders issued on court-martial cases, and of all business relating to them after they are reported upon by the Bureau of Military Justice, and with supervision over military prisoners, wherever confined. Also, with the examination and auditing of accounts of regimental, post, and company funds ; and also with the proper filing and copying of battle reports.

But a faint idea is conveyed in the foregoing of the vast amount of business daily transacted in this office, which is so made up of details as to be incapable of minute description.

It is only due to the officers, clerks, and employ  s in every branch, to say that, in intelligence, patient fidelity, accuracy, and neatness in keeping their records, they cannot, as a body, be surpassed.

#### DESERTERS.

From various causes arising out of the unsettled state of the army, there was a large number of desertions at the close of the war. To check this evil, recruiting officers were instructed to apprehend and send to military posts for trial all deserters who could be found in the vicinity of their stations, and lists were sent from companies, with a description of deserters, to facilitate their arrest. The number apprehended under this system from February 1, 1866, to October 1, 1866, is 1,029.

As an inducement to return to their duty, the President published an offer of pardon to all who would report themselves at a military post by the 15th of August, 1866. Three hundred and fourteen availed themselves of this act of clemency.

#### RECORDS.

Early in April, 1865, orders were issued to send to the Adjutant General, for file and safe-keeping, the military records of all discontinued commands. Three thousand three hundred and fifty-three boxes, containing records of two thousand one hundred and sixty-five organizations, have been received, carefully examined, and arranged for easy reference.

These records contain many data of great use in the daily business of this office, and furnish information which would have been wholly lost but for their preservation.

The following are the stations of officers of the department :

One brigadier general, on special duty under orders of the Secretary of War.

One colonel, in charge of the Adjutant General's department.

One colonel, three lieutenant colonels, and seven majors, at headquarters of military divisions and departments.

One lieutenant colonel and four majors, on duty in the Adjutant General's office.

One major, on special duty in the War Department.

One major, in the office of the general-in-chief.

The department during the past two years, and within a space of fourteen months, has had to mourn the loss, by death, of Brevet Major General Seth Williams, Major D. D. Perkins, and Brevet Colonel T. S. Bowers, officers beloved and esteemed by the whole army.

I have the honor to be, sir, very respectfully, your obedient servant,

E. D. TOWNSEND,

*Assistant Adjutant General.*

Hon. EDWIN M. STANTON,

*Secretary of War.*

TABLE A.—Report showing the state of the regiments and engineer battalion of the regular army, September 30, 1866.

Arm of service.	Enlisted men.	Date of report.	Recruits sent to regiment since date of report.	Total.
First cavalry .....	615	February 28, 1866.....	574	1,189
Second cavalry .....	876	June 30, 1866 .....	.....	876
Third cavalry.....	1,012	May 31, 1866.....	100	1,112
Fourth cavalry .....	609	July 31, 1866.....	563	1,172
Fifth cavalry.....	956	June 30, 1866 .....	159	1,115
Sixth cavalry.....	817	July 31, 1866. ....	199	1,016
Seventh cavalry.....	1,039	September 18, 1866.....	.....	1,039
First artillery.....	761	May 31, 1866.....	50	811
Second artillery.....	779	June 30, 1866 .....	.....	779
Third artillery.....	1,001	June 30, 1866 .....	.....	1,001
Fourth artillery.....	918	July 31, 1866.....	77	995
Fifth artillery.....	705	April 30, 1866 .....	333	1,038
First infantry.....	774	August 31, 1866 .....	.....	774
Second infantry.....	819	August 31, 1866 .....	.....	819
Third infantry.....	783	June 30, 1866.....	.....	783
Fourth infantry.....	563	July 31, 1866.....	.....	563
Fifth infantry. ....	293	June 30, 1866.....	666	959
Sixth infantry .....	802	July 31, 1866.....	.....	802
Seventh infantry.....	354	July 31, 1866.....	320	674
Eighth infantry.....	729	July 31, 1866.....	.....	729
Ninth infantry.....	596	February 28, 1866.....	.....	596
Tenth infantry.....	663	August 31, 1866 .....	.....	663
Eleventh infantry.....	1,853	August 31, 1866 .....	.....	1,853
Twelfth infantry.....	1,711	April 30 and May 31, 1866..	90	1,801
Thirteenth infantry.....	1,312	March 31, 1866.....	965	2,277
Fourteenth infantry .....	1,710	October and Decem'r, 1865 .....	.....	1,710
Fifteenth infantry.....	1,401	June 30, 1866 .....	250	1,651
Sixteenth infantry.....	1,493	April 30, 1866 .....	606	2,099
Seventeenth infantry .....	1,727	April 30, 1866 .....	348	2,075
Eighteenth infantry .....	1,794	June 30, 1866 .....	250	2,044
Nineteenth infantry .....	1,724	July 31, 1866.....	179	1,903
Corps of engineers.....	612	September 30, 1866.....	10	622
Total.....	31,801	.....	5,744	37,545

REMARKS.

Maximum strength of the army.

45 regiments of infantry, at 1,196 men per regiment.....	53,820
10 regiments of cavalry, at 1,196 men per regiment.....	11,960
5 regiments of artillery, at 1,770 men per regiment.....	8,850
Corps of engineers.....	752
Total.....	75,382

Minimum strength of the army.

45 regiments of infantry, at 836 men per regiment.....	37,620
10 regiments of cavalry, at 1,028 men per regiment .....	10,280
5 regiments of artillery, at 1,130 men per regiment. ....	5,650
Corps of engineers.....	752
Total.....	54,302

Number of recruits required to fill the army to its minimum strength..... 16,757

ADJUTANT GENERAL'S OFFICE, October 20, 1866.

TABLE B.—Statement of the number of enlistments and re-enlistments in the regular army from October 1, 1865, to October 1, 1866, compiled from reports forwarded to this office by recruiting officers.

Regiments.	Total.	Regiments.	Total.
General service.....	15,215	5th United States infantry.....	52
Mounted service.....	6,194	6th United States infantry.....	48
1st United States cavalry.....	124	7th United States infantry.....	26
2d United States cavalry.....	143	8th United States infantry.....	92
3d United States cavalry.....	37	9th United States infantry.....	332
4th United States cavalry.....	79	10th United States infantry.....	68
5th United States cavalry.....	224	11th United States infantry.....	865
6th United States cavalry.....	51	12th United States infantry.....	1,517
7th United States cavalry }	621	13th United States infantry.....	1,313
8th United States cavalry }		14th United States infantry.....	73
9th United States cavalry.....	266	15th United States infantry.....	1,030
10th United States cavalry.....	27	16th United States infantry.....	1,075
1st United States artillery.....	456	17th United States infantry.....	829
2d United States artillery.....	280	18th United States infantry.....	1,342
3d United States artillery.....	758	19th United States infantry.....	974
4th United States artillery.....	296	40th United States infantry.....	76
5th United States artillery.....	85	Engineer corps.....	514
1st United States infantry.....	188	Ordnance corps.....	650
2d United States infantry.....	209	Military Academy.....	77
3d United States infantry.....	94		
4th United States infantry.....	314	Aggregate.....	36,674

ADJUTANT GENERAL'S OFFICE, October 20, 1866.

TABLE C.—*Exhibit of volunteer troops, mustered out and returned to their homes, from May 1, 1865, to November 1, 1866.*

States.	Regiments.	Independent companies.	Batteries.	Agg'e strength. Commissioned officers and enlisted men.
Alabama.....	1	.....	.....	667
Arizona.....	1	.....	.....	357
Arkansas.....	6	.....	1	5,186
California.....	9	10	.....	6,938
Colorado.....	2	.....	1	1,745
Connecticut.....	19	.....	3	14,169
Dakota.....	.....	2	.....	169
Delaware.....	5	.....	2	2,861
District of Columbia.....	1	.....	.....	1,157
Florida.....	2	1	.....	922
Georgia.....	.....	2	.....	147
Illinois.....	133	2	27	92,567
Indiana.....	98	.....	19	71,209
Indian Nation.....	3	.....	.....	2,017
Iowa.....	44	2	4	32,173
Kansas.....	11	8	2	8,496
Kentucky.....	24	.....	5	14,961
Louisiana.....	4	.....	.....	2,642
Maine.....	17	24	7	19,971
Maryland.....	14	3	3	11,312
Massachusetts.....	39	12	21	34,270
Michigan.....	44	1	2	38,385
Minnesota.....	15	.....	3	12,437
Mississippi.....	.....	5	.....	355
Missouri.....	39	.....	.....	28,266
Nebraska.....	.....	8	.....	508
Nevada.....	.....	9	.....	833
New Hampshire.....	16	.....	.....	10,846
New Jersey.....	21	.....	5	21,153
New Mexico.....	2	.....	.....	1,731
New York.....	163	.....	24	136,593
North Carolina.....	3	.....	.....	2,224
Ohio.....	137	18	21	102,398
Oregon.....	.....	16	.....	1,124
Pennsylvania.....	116	5	9	107,332
Rhode Island.....	8	1	.....	5,616
Tennessee.....	24	3	5	14,659
Texas.....	2	.....	.....	1,275
Vermont.....	12	2	3	9,932
Virginia.....	.....	1	.....	85
Washington.....	.....	3	.....	253
West Virginia.....	15	3	5	12,965
Wisconsin.....	49	.....	10	38,655
First army corps, (Hancock's).....	9	.....	.....	7,406
United States volunteers.....	6	.....	.....	5,081
Colored troops.....	124	1	10	111,682
Veteran Reserve Corps.....	24	174	.....	27,291
Total.....	1,262	316	192	1,023,021

THOMAS M. VINCENT,  
Assistant Adjutant General.

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,  
November 1, 1866.



TABLE D.—*Exhibit of the number of organizations—volunteers and militia—organized and mustered into the service of the United States during the rebellion.*

States and Territories.	Under call of April 15, 1861, for 75,000 militia.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....												
Arizona.....												
Arkansas.....												
California.....												
Colorado.....												
Connecticut.....	3											
Dakota.....												
Delaware.....	2											
District of Columbia.....												
Florida.....												
Georgia.....												
Illinois.....	6		14								5	
Indiana.....	6											
Indian Territory.....												
Iowa.....	1											
Kansas.....												
Kentucky.....												
Louisiana.....												
Maine.....	1											
Maryland.....												
Massachusetts.....	5	1									1	
Michigan.....	1											
Minnesota.....	1											
Mississippi.....												
Missouri.....	5		3								2	
Nebraska.....												
Nevada.....												
New Hampshire.....	1											
New Jersey.....	4											
New Mexico.....												
New York.....	17											
North Carolina.....												
Ohio.....	22					2					2	
Oregon.....												
Pennsylvania.....	25											
Rhode Island.....	1										1	
South Carolina.....												
Tennessee.....												
Texas.....												
Vermont.....	1											
Virginia.....												
Washington Territory.....												
West Virginia.....	1											
Wisconsin.....	1											
First army corps.....												
United States volunteers.....												
United States colored troops.....												
Total.....	104	1	17			2					11	

*Exhibit of the number of organizations, &c.—Continued.*

States and Territories.	Under call of May 3, 1861, for 39 regiments of infantry and 1 of cavalry, and acts of July 22-25, for 500,000 volunteers.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....												
Arizona.....												
Arkansas.....												
California.....												
Colorado.....												
Connecticut.....	9					6		1			1	
Dakota.....												
Delaware.....	2			1							1	1
District of Columbia.....												
Florida.....												
Georgia.....												
Illinois.....	58			13							25	
Indiana.....	49			3							16	
Indian Territory.....												
Iowa.....	16		3	5		2					3	
Kansas.....	3			5							2	
Kentucky.....	28			6							2	
Louisiana.....												
Maine.....	14		1	1							6	
Maryland.....	10		1	1		4					2	
Massachusetts.....	25		7	1				1			7	
Michigan.....	18		5	3		2					8	
Minnesota.....	4		2			3					2	
Mississippi.....												
Missouri.....	24		6	7	1	2	1	1			4	
Nebraska.....												
Nevada.....												
New Hampshire.....	7		3								1	
New Jersey.....	10			1							2	
New Mexico.....												
New York.....	89		4	12		1	2	4	3		14	
North Carolina.....												
Ohio.....	77		2	6		7	1				16	
Oregon.....												
Pennsylvania.....	77		4	11			1	1				1
Rhode Island.....	3				2		1	1				
South Carolina.....												
Tennessee.....												
Texas.....												
Vermont.....	7		3	1							2	
Virginia.....												
Washington Territory.....												
West Virginia.....	11			2							3	
Wisconsin.....	19		1	3		1					12	1
First army corps.....												
United States volunteers.....												
United States colored troops.....												
Total.....	560		42	82	3	28	6	9	3		129	3

*Exhibit of the number of organizations, &c.—Continued.*

States and Territories.	Under call of July 2, 1862, for 300,000 volunteers.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Regt's.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama .....												
Arizona .....												
Arkansas .....												
California .....												
Colorado .....												
Connecticut .....	7							1			1	
Dakota .....												
Delaware .....												
District of Columbia .....												
Florida .....												
Georgia .....												
Illinois .....	61			1							7	
Indiana .....	31			2							8	
Indian Territory .....												
Iowa .....	24		3	4							1	
Kansas .....	4										1	
Kentucky .....	4			9							2	
Louisiana .....												
Maine .....	4							1				
Maryland .....	4										1	
Massachusetts .....	11			2				1		1	6	
Michigan .....	12		1	8							6	
Minnesota .....	5											
Mississippi .....												
Missouri .....	7			3								
Nebraska .....												
Nevada .....												
New Hampshire .....	6											
New Jersey .....	5											
New Mexico .....												
New York .....	61		5	1				5			12	
North Carolina .....												
Ohio .....	44		8	6				2			10	
Oregon .....												
Pennsylvania .....	35		5	6				1				
Rhode Island .....	1			1								
South Carolina .....												
Tennessee .....												
Texas .....												
Vermont .....	2							1				
Virginia .....												
Washington Territory .....												
West Virginia .....	5		2	1							2	
Wisconsin .....	13											
First army corps .....												
United States volunteers .....												
United States colored troops .....												
Total .....	346		24	44				12		1	57	

*Exhibit of the number of organizations, &c.—Continued.*

States and Territories.	Under call of August 4, 1862, for 300,000 militia.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....												
Arizona.....												
Arkansas.....												
California.....												
Colorado.....												
Connecticut.....	7											
Dakota.....												
Delaware.....	2											
District of Columbia.....												
Florida.....												
Georgia.....												
Illinois.....												
Indiana.....												
Indian Territory.....												
Iowa.....												
Kansas.....												
Kentucky.....												
Louisiana.....												
Maine.....	8											
Maryland.....												
Massachusetts.....	17										1	
Michigan.....												
Minnesota.....				1		4					1	
Mississippi.....												
Missouri.....												
Nebraska.....												
Nevada.....												
New Hampshire.....	2		3									
New Jersey.....	11											
New Mexico.....												
New York.....	2											
North Carolina.....												
Ohio.....												
Oregon.....												
Pennsylvania.....	15		2									
Rhode Island.....	2											
South Carolina.....												
Tennessee.....												
Texas.....												
Vermont.....	5											
Virginia.....												
Washington Territory.....												
West Virginia.....												
Wisconsin.....	1											
First army corps.....												
United States volunteers.....												
United States colored troops.....												
Total.....	72		5	1		4					2	

*Exhibit of the number of organizations, &c.—Continued.*

States and Territories.	Under call of June 15, 1863, for 100,000 six-months militia, (from Maryland, Pennsylvania, Ohio, and West Virginia.)											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....												
Arizona.....												
Arkansas.....												
California.....												
Colorado.....												
Connecticut.....												
Dakota.....												
Delaware.....												
District of Columbia.....												
Florida.....												
Georgia.....												
Illinois.....												
Indiana.....	4											
Indian Territory.....												
Iowa.....												
Kansas.....												
Kentucky.....												
Louisiana.....												
Maine.....												
Maryland.....	2					5					2	
Massachusetts.....												
Michigan.....												
Minnesota.....												
Mississippi.....												
Missouri.....												
Nebraska.....												
Nevada.....												
New Hampshire.....												
New Jersey.....												
New Mexico.....												
New York.....												
North Carolina.....												
Ohio.....	2					8						
Oregon.....												
Pennsylvania.....		3	2	3	1						3	
Rhode Island.....												
South Carolina.....												
Tennessee.....												
Texas.....												
Vermont.....												
Virginia.....												
Washington Territory.....												
West Virginia.....				1							1	
Wisconsin.....												
First army corps.....												
United States volunteers.....												
United States colored troops.....												
Total.....	8	3	2	4	1	13					6	

*Exhibit of the number of organizations, &c.—Continued.*

States and Territories.	Under call of October 17, 1863, for 300,000 volunteers.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....												
Arizona.....												
Arkansas.....												
California.....												
Colorado.....												
Connecticut.....	1		4									
Dakota.....												
Delaware.....												
District of Columbia.....												
Florida.....												
Georgia.....												
Illinois.....				1		9					1	
Indiana.....	6			5								
Indian Territory.....												
Iowa.....												
Kansas.....	1			2								
Kentucky.....											1	
Louisiana.....												
Maine.....	2											
Maryland.....												
Massachusetts.....	1											
Michigan.....												
Minnesota.....												
Mississippi.....												
Missouri.....				1			1					
Nebraska.....												
Nevada.....												
New Hampshire.....												
New Jersey.....	3			2							3	
New Mexico.....												
New York.....	3		4	7		2					2	
North Carolina.....												
Ohio.....				1								
Oregon.....												
Pennsylvania.....												
Rhode Island.....				1				1				
South Carolina.....												
Tennessee.....												
Texas.....												
Vermont.....	1										1	
Virginia.....												
Washington Territory.....												
West Virginia.....												
Wisconsin.....												
First army corps.....												
United States volunteers.....												
United States colored troops.....												
Total.....	18	.....	8	20	.....	11	1	1	.....	.....	8	



*Exhibit of the number of organizations, &c.—Continued.*

States and Territories.	Under calls of February 1, 1864, for 500,000 men, and March 14, 1864, for 200,000 men.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama .....												
Arizona .....												
Arkansas .....												
California .....												
Colorado .....												
Connecticut .....												
Dakota .....												
Delaware .....												
District of Columbia .....												
Florida .....												
Georgia .....												
Illinois .....						9						
Indiana .....												
Indian Territory .....												
Iowa .....												
Kansas .....				1								
Kentucky .....												
Louisiana .....												
Maine .....	2		2	1		8					1	
Maryland .....												
Massachusetts .....	5										3	
Michigan .....												
Minnesota .....				1		1						
Mississippi .....												
Missouri .....												
Nebraska .....												
Nevada .....												
New Hampshire .....				1								
New Jersey .....												
New Mexico .....												
New York .....	1			7				3				
North Carolina .....												
Ohio .....			15									
Oregon .....												
Pennsylvania .....												
Rhode Island .....												
South Carolina .....												
Tennessee .....												
Texas .....												
Vermont .....												
Virginia .....												
Washington Territory .....												
West Virginia .....												
Wisconsin .....	4										1	3
First army corps .....												
United States volunteers .....												
United States colored troops .....												
Total .....	12		17	11		18		3			5	3

*Exhibit of the number of organizations, &c.—Continued.*

States and Territories.	Under calls of 1864, for 100-day troops.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....												
Arizona.....												
Arkansas.....												
California.....												
Colorado.....												
Connecticut.....												
Dakota.....												
Delaware.....			3									
District of Columbia.....												
Florida.....												
Georgia.....												
Illinois.....	13		2									
Indiana.....	8											
Indian Territory.....												
Iowa.....	4	1										
Kansas.....	1											
Kentucky.....												
Louisiana.....												
Maine.....												
Maryland.....	2											
Massachusetts.....	5		9									
Michigan.....												
Minnesota.....												
Mississippi.....												
Missouri.....												
Nebraska.....												
Nevada.....												
New Hampshire.....												
New Jersey.....	1											
New Mexico.....												
New York.....	10		2								1	
North Carolina.....												
Ohio.....	42											
Oregon.....												
Pennsylvania.....	6	1	2			5			1		1	
Rhode Island.....												
South Carolina.....												
Tennessee.....												
Texas.....												
Vermont.....												
Virginia.....												
Washington Territory.....												
West Virginia.....												
Wisconsin.....	3											
First army corps.....												
United States volunteers.....												
United States colored troops.....												
Total.....	95	2	18			5			1		2	

*Exhibit of the number of organizations, &c.—Continued.*

States and Territories.	Under call of July 18, 1864, for 500,000 men.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....												
Arizona.....												
Arkansas.....												
California.....												
Colorado.....												
Connecticut.....												1
Dakota.....												
Delaware.....												
District of Columbia.....												
Florida.....												
Georgia.....												
Illinois.....	2										1	
Indiana.....	2											
Indian Territory.....												
Iowa.....												
Kansas.....				1								
Kentucky.....	3											
Louisiana.....												
Maine.....			36									
Maryland.....			4									
Massachusetts.....			8					2				
Michigan.....	6											
Minnesota.....	1					2		1				
Mississippi.....												
Missouri.....	11											
Nebraska.....												
Nevada.....												
New Hampshire.....	1							1				
New Jersey.....	2											
New Mexico.....												
New York.....	8		41	2				1				
North Carolina.....												
Ohio.....	11											
Oregon.....												
Pennsylvania.....	13							2				
Rhode Island.....			5									
South Carolina.....												
Tennessee.....												
Texas.....												
Vermont.....												
Virginia.....												
Washington Territory.....												
West Virginia.....	1											
Wisconsin.....	5											
First army corps.....												
United States volunteers.....												
United States colored troops.....												
Total.....	66		94	3		2		7			1	1

Exhibit of the number of organizations, &c.—Continued.

States and Territories.	Under call of December 19, 1864, for 300,000 one, two and three-year men.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Regt's.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....												
Arizona.....												
Arkansas.....												
California.....												
Colorado.....												
Connecticut.....												
Dakota.....												
Delaware.....												
District of Columbia.....												
Florida.....												
Georgia.....												
Illinois.....	10		51									
Indiana.....	14											
Indian Territory.....												
Iowa.....												
Kansas.....											1	
Kentucky.....												
Louisiana.....												
Maine.....												
Maryland.....												
Massachusetts.....				2								
Michigan.....												
Minnesota.....	1		1									
Mississippi.....												
Missouri.....	1											
Nebraska.....												
Nevada.....												
New Hampshire.....												
New Jersey.....	1											
New Mexico.....												
New York.....	2		1									
North Carolina.....												
Ohio.....	14											
Oregon.....												
Pennsylvania.....	3		75									
Rhode Island.....												
South Carolina.....												
Tennessee.....												
Texas.....												
Vermont.....												
Virginia.....												
Washington Territory.....												
West Virginia.....												
Wisconsin.....	8											
First army corps.....												
United States volunteers.....												
United States colored troops.....												
Total.....	54		128	2							1	

Exhibit of the number of organizations, &c.—Continued.

States and Territories.	Under special calls and offers, 1861-'62-'63-'64, for volunteers and militia.											
	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Regt's.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....				2	1							
Arizona.....		1										
Arkansas.....	2	1		4							1	
California.....	8			2	1							
Colorado.....	1		1	3							1	
Connecticut.....												
Dakota.....						2						
Delaware.....												
District of Columbia.....	2		40		1	1						
Florida.....				2		1						
Georgia.....			2									
Illinois.....	5											
Indiana.....	18			1		1					1	
Indian Territory.....	3		2									
Iowa.....			18									
Kansas.....												
Kentucky.....	12			1							2	
Louisiana.....	4	1		2								
Maine.....			10									3
Maryland.....												
Massachusetts.....			15			7					1	8
Michigan.....												
Minnesota.....												
Mississippi.....				1								
Missouri.....	27	11	32	18	2						2	
Nebraska.....				2		1						
Nevada.....			3			6						
New Hampshire.....			4									2
New Jersey.....			11								1	
New Mexico.....	6			1								
New York.....	52					2						
North Carolina.....	4											
Ohio.....	6					1						
Oregon.....	1			1								
Pennsylvania.....	15	1	2	4		8			1		2	9
Rhode Island.....	2		1			2					1	
South Carolina.....												
Tennessee.....	16			12		3	1					
Texas.....				2		2						
Vermont.....						2						
Virginia.....	1		1									
Washington Territory.....			3									
West Virginia.....												
Wisconsin.....												
First army corps.....	9											
United States volunteers.....	6											
United States colored troops.....	133		4	7				12			10	
Total.....	333	15	149	65	5	39	1	12	1		22	22

## RECAPITULATION.

States and Territories.	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
Alabama.....				2	1							
Arizona.....		1										
Arkansas.....	2	1		4							1	
California.....	8			2	1							
Colorado.....	1		1	3							1	
Connecticut.....	27		4			6		2			2	1
Dakota.....						2						
Delaware.....	6		3	1							1	1
District of Columbia.....	2		40		1	1						
Florida.....				2		1						
Georgia.....			2									
Illinois.....	155		67	15		18					38	
Indiana.....	138			11		1					26	
Indian Territory.....	3		2									
Iowa.....	45	1	24	9		2					4	
Kansas.....	9			8							4	
Kentucky.....	47			17							7	
Louisiana.....	4	1		2								
Maine.....	31		49	2		8		1			7	3
Maryland.....	18		5	1		9					5	
Massachusetts.....	69	1	39	5		7		4		1	19	8
Michigan.....	37		6	11		2					14	
Minnesota.....	12		3	2		10		1			3	
Mississippi.....				1								
Missouri.....	75	11	41	29	3	2	2	1			8	
Nebraska.....				2		1						
Nevada.....			3			6						
New Hampshire.....	17		10	1				1			1	2
New Jersey.....	37		11	3							6	
New Mexico.....	6			1								
New York.....	245		57	29		5	2	13	3		29	
North Carolina.....	4											
Ohio.....	218		25	13		18	1	2			28	
Oregon.....	1			1								
Pennsylvania.....	189	5	92	24	1	13	1	4	2		6	10
Rhode Island.....	9		6	2	2	2	1	2			2	
South Carolina.....												
Tennessee.....	16			12		3	1					
Texas.....				2		2						
Vermont.....	16		3	1		2		1			3	1
Virginia.....	1		1									
Washington Territory.....			3									
West Virginia.....	18		2	4							6	
Wisconsin.....	54		1	3		1					13	4
First army corps.....	9											
United States volunteers.....	6											
United States colored troops.....	133		4	7				12			10	
Grand total.....	1,668	21	504	232	9	122	8	44	5	1	244	30



## RECAPITULATION.

Calls under which furnished.	Infantry. No. of—			Cavalry. No. of—			Artillery. No. of—					
	Regiments.	Battalions.	Independent companies.	Regiments.	Battalions.	Independent companies.	Reg'ts.		Battal's.		Comp's.	
							Light.	Heavy.	Light.	Heavy.	Light.	Heavy.
April 15, 1861.....	104	1	17	.....	.....	2	.....	.....	.....	.....	11	.....
May 3 and acts of July 22 and 25, 1861.....	560	.....	42	82	3	23	6	9	3	.....	129	3
July 2, 1862.....	346	.....	24	44	.....	.....	.....	12	.....	1	57	.....
August 4, 1862.....	72	.....	5	1	.....	4	.....	.....	.....	.....	2	.....
June 15, 1863.....	8	3	2	4	1	13	.....	.....	.....	.....	6	.....
October 17, 1863.....	18	.....	8	20	.....	11	1	1	.....	.....	8	1
February 1 and March 14, 1864.....	12	.....	17	11	.....	18	.....	3	.....	.....	5	3
1864, for 100-day troops.....	95	2	18	.....	.....	5	.....	.....	1	.....	2	.....
July 18, 1864.....	66	.....	94	3	.....	2	.....	7	.....	.....	1	1
December 19, 1864.....	54	.....	123	2	.....	.....	.....	.....	.....	.....	1	.....
Special, 1861, '62, '63, '64.....	333	15	149	65	5	39	1	12	1	.....	22	22
Grand total.....	1,668	21	504	232	9	122	8	44	5	1	244	30

THOMAS M. VINCENT,  
Assistant Adjutant General.

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,  
November 1, 1866.

*Report of Brevet Colonel C. W. Foster, assistant adjutant general, in charge of Bureau of Colored Volunteers.*

ADJ'T GENERAL'S OFFICE, BUREAU FOR COLORED TROOPS,  
October 20, 1866.

GENERAL: I have the honor to submit the following report of the operations of this bureau for the past year.

On referring to the last annual report from this office, it will be seen that there were at that time in service ninety-eight regiments and six light batteries of colored troops, numbering in all, officers and enlisted men, eighty-five thousand and twenty-four.

During the past year there have been mustered out of service seventy-nine regiments and six light batteries, which, with the incidental losses sustained during the year by the regiments still retained, gives an aggregate reduction of seventy-two thousand and thirty-nine officers and men, leaving in service at the date eighteen regiments of infantry and one of artillery, numbering in the aggregate twelve thousand nine hundred and eighty-five. Of this force, five regiments of infantry are now under orders for muster out of service, which will reduce the number in service, on or about the first of next November, to thirteen regiments of infantry and one of artillery, numbering about ten thousand, commissioned and enlisted. The statistical table recently submitted will show when and where the several organizations were mustered out, where finally paid and discharged, and the numerical strength of each at date of discharge.

## REMARKS UPON STATISTICAL TABLE, AND EXTRACTS THEREFROM.

The statistical table, to which reference has been made, has required much labor in its preparation, and where doubts have arisen as to the fate of any

officer or enlisted man, the records have been carefully examined and compared and the facts elicited. The table is presented with the belief that it may be received as the nearest possible approximation to the truth. Some of the items contained therein are thought to be of sufficient general interest to warrant their presentation as below.

## OFFICERS.

		Rate per thousand
Mustered out with their commands.....	3,412	490.65
Resigned and discharged.....	2,523	362.81
Dismissed and dropped.....	233	33.51
Died.....	194	27.90
Killed in action.....	91	13.09
Missing in action.....	4	0.58
Now in service.....	497	71.46
	<hr/>	
Number appointed and mustered in during the rebellion	6,954	
	<hr/> <hr/>	

## ENLISTED MEN.

Mustered out.....	86,923	512.44
Discharged, (principally for physical disability,)....	20,236	119.29
Died .....	31,866	187.86
Deserted .....	14,887	87.78
Killed in action.....	1,514	8.92
Missing in action.....	1,344	7.92
Transferred to navy.....	366	2.17
Now in service.....	12,488	73.62
	<hr/>	
Number mustered in during the rebellion.....	169,624	
	<hr/> <hr/>	

Of the officers it will be seen that the killed and missing in action constitute about one and three-tenths per cent. of the whole number in service; the loss sustained by the enlisted men from the same causes is about nine-tenths of one per cent. killed, and nearly four-fifths of one per cent. missing.

About two and seven-tenths per cent. of the officers, and nearly nineteen per cent. of the enlisted men, died in service. The proportion of those who died from wounds cannot well be determined at this office.

Thirty-six per cent. of the officers were discharged before expiration of term of service, and about twelve per cent. of the enlisted men—the latter principally in consequence of physical disability.

The number of enlisted men who deserted is about eight and three-fourths per cent.

## COMMISSIONS UNDER THE ACTS APPROVED FEBRUARY 24, 1864, AND JULY 28, 1866.

The discontinuation of the commission for the State of Delaware, appointed by the Secretary of War under act of Congress approved February 24, 1864, was noted in my last annual report.

A synopsis of the transactions of the commission for the State of Maryland from the date of its organization to the date of the last annual report was therein presented. From that date up to November 30, 1865, at which time the commission was discontinued, one hundred claims were presented, upon ninety-six of which the commission made awards amounting in the aggregate to twenty-eight thousand four hundred dollars. As the result of the labors of both commissions, there are now on file in this office eight hundred and four claims, upon

which awards have been made amounting in the aggregate to two hundred and thirty-five thousand six hundred and eighty-three dollars.

Under the act of Congress approved July 28, 1866, the payment of these claims, and all others that may hereafter be acted upon by like commissions, must be deferred until the final reports of all the commissions for the several States shall have been received.

For further details upon this subject, and also for an account of the money received and disbursed, attention is respectfully invited to the report of Brevet Lieutenant Colonel A. F. Rockwell, disbursing officer for the bureau, which is herewith, marked A.

To my assistants, Brevet Lieutenant Colonel F. W. Taggard and Brevet Lieutenant Colonel A. F. Rockwell, and also to the clerical force employed in the office, I desire here to make due acknowledgments for able and efficient assistance cheerfully rendered, and for constant and assiduous application to duty.

I have the honor to be, very respectfully, your obedient servant,

C. W. FOSTER,

*Assistant Adjutant General U. S. Volunteers.*

The ADJUTANT GENERAL

*United States Army.*

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A.

ADJ'T GENERAL'S OFFICE, BUREAU FOR COLORED TROOPS,

*Washington, D. C., October 10, 1866.*

COLONEL: I have the honor to submit the following report as disbursing officer of the Bureau for Colored Troops for the year ending October 10, 1866.

The subjoined statement shows the condition of the funds placed in my hands.

Balance due the United States, on deposit in the United States treasury, October 10, 1865, the date of my last report.....	\$3,169 60
Disbursements made for salaries and office expenses of commission for the State of Maryland.....	1,450 04
Balance turned over to Brevet Major Samuel Dana, United States army, June 30, 1866, by order of the Secretary of War of the same date .....	1,719 56

There were forwarded to this office, from the commission for the State of Maryland, from October 10, 1865, to November 30, 1865, the date of the dissolution of the same by order of the Secretary of War, one hundred (100) claims, upon ninety-six (96) of which awards were made to the amount of twenty-eight thousand four hundred dollars, (\$28,400,) and four (4) were rejected for various causes.

I respectfully invite attention to my account current with the United States, from the opening of the office to this date, (Exhibit A;) to statement of number of claims filed with the commissions for the States of Maryland and Delaware, from the date of their organization to that of their dissolution, (Exhibit B;) to statement of number and amount of claims upon which awards have been made by the commissions for the States of Maryland and Delaware, (Exhibit C.)

I have the honor to be, colonel, very respectfully, your obedient servant,

A. F. ROCKWELL, *Brevet Lieut. Col.,*

*Asst. Adj't Gen'l Vols., Disb'g Officer Bureau for Colored Troops.*

Colonel C. W. FOSTER,

*Ass't Adj't Gen. Vols., Chief of Bureau for Colored Troops.*

A.—The United States in account current with disbursing officer Bureau for Colored Troops

DR.

1864.			
Jan. 1 to Dec. 31	To salaries and office expenses.....	\$10,111 50	
April —	To cash for slaves enlisted into the United States service...	6,900 00	
1865.			
Jan. 1 to Dec. 31	To salaries and office expenses.....	11,268 94	
1866.			
June 30	To cash turned over to Brevet Major S. Dana, United States army, as per order of Secretary of War of June 30, 1866..	1,719 56	
			30,000 00

CR.

1863.			
Dec. 12	By cash, check No. 7 on the Treasurer of the United States .....	\$10,000 00	
1864.			
June 24	By cash, check No. 6 of Captain Henry Keteltas, 15th United States infantry, disbursing officer Provost Marshal General's department, on the Treasurer of the United States.....	10,000 00	
1865.			
Mar. 11	By cash, check No. 119 on the Treasurer of the United States of Captain R. Loder, 4th United States artillery .....	10,000 00	
			30,000 00

B.—Number of claims filed with the commissions for the States of Maryland and Delaware under the act approved February 4, 1864, from their organization to their dissolution.

Number of claims filed with Maryland commission .....		3,867
Number of claims filed with Maryland commission upon which awards were made.....	786	
Number of claims filed with Maryland commission which were rejected....	279	
Number of claims filed with Maryland commission which were returned to claimants unacted upon by reason of dissolution of commission.....	2,802	
Total.....	3,867	
Number of claims filed with Delaware commission.....		114
Number of claims filed with Delaware commission upon which awards were made .....	43	
Number of claims filed with Delaware commission which were rejected....	19	
Number of claims filed with Delaware commission which were returned to claimants unacted upon by reason of dissolution of commission.....	52	
Total.....	114	
Aggregate number of claims filed with Maryland and Delaware commissions.....		3,981



**REPORT**  
**OF THE**  
**INSPECTOR GENERAL**  
**AND**  
**INSPECTOR OF THE MILITARY ACADEMY.**

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**WAR DEPARTMENT, INSPECTOR GENERAL'S OFFICE,**  
*Washington City, October 20, 1866.*

SIR: The following synopsis of the operations of the Inspector General's department of the army, during the year ending this day, is respectfully submitted for the information of the honorable Secretary of War.

With great respect, your obedient servant,

**ED. SCHRIVER,**  
*Inspector General, Bvt. Major General U. S. Army.*

The **ADJUTANT GENERAL**. *of the army.*

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**THE INSPECTION SERVICE**

of the army has not been changed in character by the return to a condition of peace. The system developed during the war, meeting as nearly as practicable all demands, is continued. General Orders No. 141, Adjutant General's office, 1865, authorizes the detail of officers for assistant inspectors general of departments and districts. By virtue of this order, and of paragraph 304, Revised Army Regulations, the operations of the Inspector General's department are extended to every military command. General Orders (No. 5, Adjutant General's office) giving detailed instructions to inspectors, were prepared and issued in January last.

**STATED MONTHLY INSPECTIONS**

have been made in every command during the year, and thereby the commanding officer kept informed of the exact state and discipline of the troops; their preparation for the field; the condition of arms, equipments, &c.; the character and quantity of supplies of every kind, and the sanitary condition of the troops. Insufficiencies, irregularities, and defects thus brought to the commander's notice have been promptly remedied to the extent of his power. Exceptional cases (166 in number) have been referred, through this office, to the general-in-chief and heads of departments for their action. These stated reports are consolidated by military departments and forwarded to this office for file: during the year 453 have been received.

**SPECIAL INSPECTIONS**

having reference to everything of military importance have been made throughout the whole country, and reports furnished for the information of the immedi-



ate commanding officers. These reports, being confidential in character, are not, as a rule, of record in this office. Hereto appended, marked A, is a schedule of such as have been received during the year; many suggestions of great importance are contained in them.

#### INSPECTOR GENERAL'S OFFICE.

The clerical labor in this office has very materially decreased, and a corresponding reduction of employés has been made. There are now but two clerks and one messenger retained.

#### OFFICERS OF THE DEPARTMENT.

The assistant inspectors general authorized by act of Congress approved 17th July, 1862, have all been mustered out of the service. The only officers left in the department are those of the regular establishment. An act of Congress, approved 28th July, 1866, provides for the promotion of three of the assistant inspectors general to the rank of lieutenant colonel, but no information has yet been received of such promotion being made. The present stations and duties of the officers are as follows:

One inspector general, inspector general division of the Missouri; one inspector general, inspector general department of the Cumberland; one inspector general, assigned inspector of United States Military Academy; one inspector general, upon special duty at War Department; one assistant inspector general, inspector general district of New Mexico; one assistant inspector general, inspector general department of the east; one assistant inspector general, inspector general division of the Pacific; one assistant inspector general, inspector general department of the lakes; one assistant inspector general, in charge of inspector general's office.

## REPORT OF THE SECRETARY OF WAR.

EXHIBIT A.—*Special inspections.*

Date.	Where made.	Subject.	By whom made.
Nov. 3, 1865..	Tour through department of Florida .....	Condition of posts, fortifications, and troops ....	Major E. B. Parsons.
Nov. 9, 1865..	Post of Harrisburg, Pennsylvania .....	Condition of subsistence department, &c. ....	Brevet Major General Ed. Schri- ver, inspector general.
Nov. 18, 1865..	Camp and general hospital, Camp Butler, Illinois ....	Inspection and condemnation of property, and inspection of camp and hospital.	Brevet Brigadier General O. H. Hart.
Nov. 23; 1865..	Tours through the departments of Mississippi and the Gulf.	Condition of posts, fortifications, and troops ...	Brevet Brigadier General R. B. Marcy.
Nov. 23, 1865..	Fort Smith, Arkansas, and Fort Gibson, Indian terri- tory.	Alleged frauds connected with the subsistence and quartermaster's departments.	Lieutenant Colonel Wm. Sinclair.
Nov. 25, 1865..	Tour through the district of the Rio Grande .....	Posts and troops .....	Assistant Surgeon Morris J. Asche.
Dec. 4, 1865..	Cairo, Illinois .....	Irregularities in the hospitals at .....	Acting Assistant Surgeon H. Wardner.
Dec. 4, 1865..	Forts Pickens, Barrancas, and McRae, and Barrancas redoubt.	Fortifications and troops, and condition and re- lease of prisoners confined in Fort Pickens.	Brevet Lieutenant Colonel J. Schuyler Crosby.
Dec. 11, 1865..	Forts Reading and Crook, California; Forts Klamath and Dalles, Oregon; Fort Vancouver, Washington Territory; and the fort and district of Boise, Idaho.	Irregularities, and to reduce as far as practicable the expenses in the quartermaster's and sub- sistence departments.	Brevet Brigadier General Chas. A. Whittier.
Dec. 20, 1865..	Philadelphia, Pennsylvania .....	Alleged frauds in the quartermaster's department.	Brevet Colonel E. H. Ludington.
Dec. 21, 1865..	Washington arsenal .....	Cause of a recent explosion at .....	Brevet Major General Ed. Schri- ver.
Dec. 26, 1865..	Baltimore recruiting rendezvous .....	Recruiting .....	Brevet Colonel E. H. Ludington.
Jan. 6, 1866..	Forts Crook and Point San José, California; Headquar- ters department of the Columbia and Fort Cape Disappointment, Washington Territory; Fort Ste- vens, Oregon; and Forts Churchill and Ruby, Ne- vada.	Fortifications and troops .....	Brevet Brigadier General C. A. Whittier.
Jan. 15, 1866..	The presidio of San Francisco, Fort Point Angel island and Alcatraz island, California.	Irregularities, and to reduce the expenses in the subsistence and quartermaster's department.	Brevet Brigadier General C. A. Whittier.
Jan. 23, 1866..	Fort Riley, Kansas .....	General, and report on a request made by the president of the Union Pacific railroad that a portion of Fort Riley reservation might be given up for railroad purposes.	Major Roger Jones.
Jan. 26, 1866..	.....	Alleged illegal and improper punishment of pri- vate Truunnel, 5th U S. cavalry.	Brevet Colonel E. H. Ludington.

Feb. 13, 1866..	Camp Cady, California, and Fort Mojave, Arizona	Fortifications and troops .....	Brevet Brigadier General C. A.
Mar. 1, 1866..	Territory; and Fort Whipple, headquarters district of Arizona.		Whittier.
Mar. 2, 1866..	Cincinnati, Ohio.....	Alleged fraudulent claims made by Chas. Laugiblen for lodging and subsisting recruits.	Brevet Colonel E. H. Ludington.
Mar. 5, 1866..	Department of the Ohio .....	Military instruction of the U. S. colored infantry.	Brevet Brigadier General O. H. Hart.
Mar. 6, 1866..	Springfield and Camp Butler, Illinois.....	Troops and general condition.....	Brevet Brigadier General O. H. Hart..
March 9 to } Mar. 29, 1866 }	Fort Whipple. Camp Date Creek, Fort McDowell, Maricopa Wells, Wickenburg, Tucson, Fort Macon, Calabasas, and Tubac, Arizona.	Posts and troops .....	Brevet Brigadier General C. A. Whittier.
Apr. 10, 1866..	Fort Bliss, Texas .....	Fort and troops .....	Brevet Colonel N. H. Davis.
Apr. 11, 1866..	Tour through the Indian country .....	General .....	Major Roger Jones.
Apr. 12, 1866..	Fort Bowie, Arizona .....	Fort and troops .....	Brevet Brigadier General C. A. Whittier.
Apr. 14, 1866..	Fort Seldon, New Mexico.....	.....do.....	Brevet Colonel N. H. Davis.
May 3, 1866..	Fort Yuma, California.....	.....do.....	Brevet Brigadier General C. A. Whittier.
May 5, 1866..	Fort Union, New Mexico .....	.....do.....	Brevet Colonel N. H. Davis.
May 7, 1866..	San Diego barracks, California.....	Post and troops .....	Brevet Brigadier General C. A. Whittier.
May 11, 1866..	New Mexico.....	Quartermaster, medical and purveying departments and headquarters.	Brevet Colonel N. H. Davis.
May 12, 1866..	New Mexico.....	Mustering and disbursing department in relation to claims against United States, made and anticipated on account of volunteer organizations.	Brevet Colonel N. H. Davis.
May 14, 1866..	New Mexico.....	Headquarters and chief commissary department.	Brevet Colonel N. H. Davis.
May 18, 1866..	New Mexico.....	Chief paymaster's office, &c.....	Brevet Colonel N. H. Davis.
May 22, 1866..	Washington, D. C. ....	Investigation of the sales of public property made by quartermaster's department and disposition of proceeds thereof.	Brevet Major General J. A. Hardie, inspector general, and Brevet Colonel E. H. Ludington.
May 25, 1866..	Forts Goodwin and Grant, Arizona .....	Forts and troops .....	Brevet Brigadier General C. A. Whittier.
June 8, 1866..	Drum barracks, Wilmington, California .....	Barracks and troops .....	Brevet Brigadier General C. A. Whittier.
June 19, 1866..	Fort Washington, Maryland.....	Alleged malfeasance of Sutler Seitz.....	Brevet Colonel E. H. Ludington.
June 21, 1866..	South Carolina.....	Condition of society as existing between the white population and freedmen, &c.	Brevet Colonel James Totten.

EXHIBIT A.—*Special inspections*—Continued.

Date.		
Aug. 13, 18		
Aug. 23, 18		
Oct. 2, 1886..	Arsenals of Baton Rouge, Mount Vernon, Augusta, Hilton Head, Charleston, and Fort Monroe, and	Whittier. Brevet Major General J. A. Hardie, inspector general, and Brevet

## WAR DEPARTMENT,

*Office of the Inspector of the Military Academy, October 25, 1866.*

SIR: The following report relative to the Military Academy is respectfully submitted.

Prior to the passage of the acts of Congress approved, respectively, July 13 and 28, 1866, the Military Academy was composed of the corps of engineers and certain professors and cadets, and the superintendence and inspection of the institution was exclusively with the officers of that corps. Section 6 of the first above-mentioned acts authorizes the selection of the superintendent "from any arm of the service" and directs that "the supervision and charge of the academy shall be in the War Department under such officer or officers as the Secretary of War may assign to that duty." Sections 1 and 19 of the second above-mentioned acts (fixing the military peace establishment of the United States) separate the corps of engineers from the Military Academy.

On the 30th July, 1866, by General Order No. 54, an inspector general of the army was assigned, by the Secretary of War, to duty as inspector of the academy, and a colonel of infantry was, on the 18th August, appointed superintendent.

I send herewith the report of the Board of Visitors who attended the examination of the academy in June last. It bears the amplest testimony to the usefulness and excellent condition of the institution, and contains some admirable suggestions, provision for carrying out of which have already been made by Congress. Not the least important of these is the requirement, by joint resolution of June 16, 1866, that candidates for admission into the academy shall have more extensive acquirements than heretofore, and that cadet appointments shall be made a year in advance of the time for admission. This last provision, for want of time, cannot go into effect until the appointments for 1868 shall be made.

The opinion of the Board of Visitors that the number of cadets be increased is commended to your attention, for the reasons given in their report. The number of graduates now sent out will afford but one to each regiment of the army every other year, after the usual number required for the staff corps are taken out. The requirements of the army in this respect are now four times what they were twenty years ago, yet the number of cadets remains the same as then. The expense of the increase recommended would be small and the army would be much benefited by the annual, though very small, increment of persons well educated for the profession. I cannot urge this increase too strongly. Other suggestions, some of which require no action of Congress, will have the attention of the academic authorities, who, as I saw from a recent inspection made by me, are most assiduous in their efforts to advance the interests of the institution and of the cadets belonging to it. Everything is being done to facilitate the acquirement of knowledge which will prove useful in the after profession of these young men, and their training in other respects is cared for.

The institution in all its departments is conducted in the most economical manner, and frugal habits are sought to be impressed on all who are educated there.

A system of discipline, well calculated, if enforced justly and judiciously, to make exact and reliable officers, is pursued, and the countenance and support of the government in uniformly sustaining the officers charged with its execution is earnestly asked.

An estimate of funds which will be required for the support of the academy during the fiscal year ending June 30, 1868, will be submitted in another communication. The amount is somewhat in excess of that appropriated in former years. Some of the items are now first asked for, but not without a close examination as to their necessity. I hope, therefore, that you will urge them to the favorable consideration of Congress.

Respectfully submitted:

ED. SCHRIVER,  
*Brevet Major General, Inspector.*

Hon. EDWIN M. STANTON, *Secretary of War.*

## REPORT OF THE BOARD OF VISITORS OF THE MILITARY ACADEMY.

WEST POINT, *June 19, 1866.*

The Board of Visitors invited to attend the annual examination of the Military Academy at West Point, and to examine into "the actual state of discipline, instruction, police, administration, fiscal affairs, and other concerns of the institution," beg leave most respectfully to submit the following report :

Upon the arrival of several of the members of the board, on the 1st of June, the remains of Lieutenant General Winfield Scott were awaiting interment. The members thus had an opportunity to participate in the last sad rites paid to the departed hero. In commemoration of the event, and as a token of their respect to the illustrious dead, and of their deep-felt sympathy with the nation's grief, the board adopted a series of resolutions, which are herewith submitted, and which they desire may be made a part of this report.

The majority of the board convened at West Point on Monday, the 4th instant, and made a temporary organization. The remainder of the day was spent in making a general inspection of the public buildings, grounds, library, and scientific apparatus, and a review of the corps of cadets.

On the 5th instant all the members having reported, the board was permanently organized. They then proceeded, by invitation of the superintendent, to attend the examination of the first or graduating class of cadets. They continued to devote themselves assiduously to this duty until the 11th instant, when the board divided itself into committees to attend two examinations of the other classes proceeding at the same time.

Standing committees were appointed to make a particular examination into the different departments of the institution to which their attention was specially directed.

The general arrangements for the education of the cadets, as developed by the examination, are satisfactory. The professors give evidence of their entire fitness for their posts, and the assistant instructors, with few exceptions, seem well qualified for their responsible positions.

The subjects embraced in the course of study are appropriate and necessary to the mental and physical training required for the military profession, and, generally, the system appears to be as complete and thorough as it can possibly be made under the present organization.

The examination of the first class showed a proficiency in the abstract sciences, and their application to the art of war, highly creditable to the capacity, industry, and scholarship of the cadets, as well as to the patience, zeal, and energy of their instructors. But the board would be delinquent in duty if they failed to notice the faulty manner of interrogation of some of the assistant instructors. Their questions were propounded without sufficient distinctness of enunciation. In connection with this, also, the board regret to have to report in some instances, in the replies of the cadets, a vagueness and diffuseness which indicated a want of proper accuracy of information, with occasional grammatical errors and inelegancies of expression. The board were impressed with the great difference in proficiency between the upper and lower sections of the same class, even upon a graduated scale of questions. They do not even remotely impute this to the professors, but attribute it partly to a fault in the system of the appointment of assistant instructors, and partly to the relatively different degrees of qualifications of the cadets upon their admission to the academy.

It is proper here to state that these criticisms are chiefly applicable to the examinations in Spanish, engineering, ordnance, and gunnery. It is very evident that the difficulty arises to some extent from the crowding of the first class with too many studies. Sufficient time had not been devoted to these important branches of military education.

In geology, mineralogy, and ethics the exhibition was highly creditable. In



the descriptions of battles, in the department of engineering, many of the cadets exhibited a pleasing talent for narrative, an accurate knowledge of history, and a thorough acquaintance with strategical and tactical movements. In the department of military tactics and the exercise of the manual of arms, the cadets displayed a precision of drill and a perfection of discipline worthy of all praise.

Before dismissing the subject of studies of the first class, the board would remark that the geological and mineralogical specimens were obviously small in number and variety and were generally of the most common kind. In view of the growing importance of these sciences, the board would suggest an appropriation by Congress to make the necessary additions to the cabinet of minerals and geological specimens, as also to that of the sister science of chemistry. In the development of the mineral resources of the country, these departments of science promise the greatest triumphs and most profitable results.

The examination of the junior classes was highly satisfactory. In natural philosophy, chemistry, and the languages, the sections exhibited great proficiency. In mathematics, the demonstrations were given with that precision and accuracy which are characteristic of the science itself, and with a promptness and fulness of illustration which were really remarkable, indicating that the instructions in this department are not surpassed by those of any institution in the world. The specimens of drawing were creditable alike to pupils and professors, and were especially commendable in view of the fact that from the absence of the chief professor in this department from sickness, the classes have been for several months entirely under the supervision of assistant instructors.

The board would now notice more particularly some of the errors referred to above, and make such suggestions as may occur to them. They are fully convinced that the system of appointment of assistant instructors requires modification and correction. The term of service of the assistant professors is not fixed by law. Prior to 1855, custom permitted an officer to remain here as long as he gave satisfaction and was himself satisfied with his position. The result was that officers remained, not unfrequently, ten or fifteen years. Since 1855, changes have been frequent, and at present are made dependent on the interests of the service as viewed by the Secretary of War. These frequent changes are highly objectionable, and while some excuses for this policy may be found during the last four years in the inexorable demands of war, yet the board regret to say that, independently of any urgent necessity, there is an evident and growing tendency to shorten rather than increase the term of service of the assistant instructors.

The board are firmly impressed with the conviction that the various departments of instruction at the academy labor under great disadvantages in the difficulty of obtaining the services, as assistant professors, of officers of the highest grade of talent, and of retaining those who are detailed a sufficient length of time to give them that interest in the subjects taught, and that practical experience in teaching, which are absolutely necessary to their success as teachers. It is a mistake to suppose that any officer who has graduated at the academy is at once qualified to act as an instructor. He must have an aptness for teaching as well as a capacity for acquiring knowledge, and those qualities, without an actual experience of several years in the recitation-room, are of little avail to the pupil.

Now that peace is restored and the services of officers are not required in the field, it is to be hoped that instructors of the highest ability and fitness will be selected for duty, that a much greater degree of permanency will be given to their position, and that every inducement consistent with the service will be offered to them to become interested in and devoted to their duties.

The board would not attempt to fix any specific term of service, but they are of the opinion that assistant instructors should be retained at least four years while the principal assistant professors could advantageously be assigned to duty for a

longer period. The academy would thus, they are satisfied, receive the benefits of greater experience and proficiency, while no detriment would follow from the occasional absence of the professors. The army and the country would thus secure a larger class of accomplished officers, and the system of rotation would bring out any peculiar merit in the instructors. Care, however, should be taken that the officer should not be retained so long from his corps as to weaken his sympathies for his profession.

It is worthy of consideration whether it would not be well to substitute, in part, written for oral examinations. It would throw each one more fully on his own resources, compensate for any lack of fluency of speech of some and the natural timidity of others, and relieve the professors from any imputations of favoritism or prejudice, and from the almost inevitable tendency to ask leading questions. Moreover, in that part of the examination which continued to be oral, it is suggested that the questions should be given out to the cadets by lot, thereby insuring more justice in the distribution.

As bearing on the moral training of the cadets, the board are of opinion that it is eminently desirable that the chaplain of the post should not be a member of the academic board. In such an institution as this, with its strict surveillance and rigid discipline, there is an intrinsic incompatibility between the position of a professor and that of a moral instructor. For the efficacy of the latter there should be a freedom from constraint, a mutual confidence, and a cordiality of intercourse, which cannot possibly exist under the present arrangement. The board are painfully impressed with the fact that there is no provision made for religious instruction, with the exception of public service on Sunday mornings. They believe that it is entirely compatible with the highest attainment in the art of war that the soldier should be carefully taught his relation to that Being who guides in war as well as in peace, and with whom is the destiny of individuals and of nations. With these earnest convictions the board would respectfully recommend:

First. That the chaplain be relieved from academic duties, in order that he may devote himself exclusively to the moral and religious training of the cadets.

Second. That he be required to hold daily, in the chapel, morning prayers, upon which all who choose may have the privilege of attending.

Third. That he be required to form a class for biblical instruction on the Sabbath day, which the cadets may be earnestly invited to attend.

Fourth. That, as an additional inducement for the proper observance of the Sabbath, all military duties be dispensed with on that day, so far as it is consistent with proper military discipline.

The board are unanimously of opinion that the corps of cadets could be advantageously increased from 292 (the number now authorized by law) to 400. For this number they are assured by the superintendent that there would be ample barrack room, with very small additional expense and a slight increase in the number of assistant instructors. The records of the academy show that for four years, between 1856 and 1860, the graduating classes numbered an average per year of thirty-five and a half persons. In other words, we have the mortifying fact that in a nation of thirty millions of people there is annually but little over one graduate of the Military Academy for each million of the population. From the nature of our government, its extent, the peculiar character of our frontier settlements, and the popular prejudice to a large standing army in time of peace, there is a pressing necessity for a larger class of thoroughly educated officers, competent to serve in any of the different staff corps of the army, as emergency or the demands of the service may require. The board would cheerfully recommend even a greater increase in the number of cadets to meet the increasing demands of the service for educated and scientific officers, if they believed it would find favor with Congress. There appears to be a constant effort on the part of the academic board to enlarge the course of studies

even beyond what it was when it extended to five years, and to increase the size, number, and subject-matter of the text-books. In the opinion of this board the course should be reduced at least one-fourth. The effect of attempting to teach too much must result in imparting to the cadets but a superficial knowledge of the different subjects, and in breaking down all those who have not had the advantages of a previous college education. The attempt to make West Point at once an elementary school, a high school, a scientific school, and a school for the application of all the branches of science, must defeat the object of its creation.

Looking to the future, and consulting the interests of the service and of the country, the board believe that Congress, by appropriate legislation, will provide, at no distant day, for the establishment of separate schools for the application of military science, in order that the institution at West Point may better fulfil the objects and purposes of its first organization, and become the great military scientific school of the nation. It would be well for us to emulate in this respect the high example of France, who, by a subdivision into the scientific, polytechnic, and tactical schools of Paris, Saint Cyr, Metz, and Vincennes, has greatly promoted not only the efficiency of her armies but has met more fully the demands of the nation for general scientific and tactical education.

The board are of the opinion that the military education of the graduates at West Point might be greatly improved by obliging them after graduating to serve for a period in the different corps of the army, in order to enable them to apply in practice the principles which they have acquired at the academy. It is accordingly recommended that hereafter graduates be required, immediately upon their leaving West Point, to enter one of the regiments of the line and serve for at least two years before they become eligible to appointment into the engineer or other staff corps of the army. This would tend to obliterate the unkind feelings and animosities which exist between the different corps of the army.

The board deem it of greater importance to raise the standard of qualification in the cadets than to increase to any considerable extent their number. The evident deficiency in scholarship in some of the lower sections is obviously due not so much to want of natural parts as to deficiency in previous preparation. The standard for admission to the institution is now ridiculously low; the most ordinary classical academies and high schools demand a fuller course of preparation than is required of those seeking admission into West Point. The board are of the opinion that the standard of admission should at least be so far elevated as to require the candidates, besides being adept in spelling, reading, and writing, to be thoroughly acquainted with descriptive geography as taught in our public schools, arithmetic, the elements of English grammar, and the history of the United States. The present system of appointment of cadets is so degraded by political considerations that the competitive system of examination seems to the board absolutely necessary to secure a higher standard of qualification, and they would suggest that the members of Congress, instead of recommending one person for each vacancy, nominate a considerable number of candidates desiring admission to the Military Academy from their congressional districts; that the persons so nominated be required to submit themselves to a board of examiners in their respective districts, to be designated by the Secretary of War, in respect to their educational qualifications, their mental abilities, and their physical condition; and that the persons recommended by said board as passing the best examination receive the appointments. Such a method of appointment, by exciting periodically a healthful stimulus of competition in each congressional district, would have the double effect of promoting the cause of popular education throughout the country, and of securing to the academy the choicest youth of the nation. Under such a competition there would no longer be any difficulty about raising the standard of qualifications. The standard would rise of its own accord, by the mere force of circumstances, as surely and inevitably as the rise of the ocean tide. Only give to all the youth of the country who may be desirous of entering the

academy the opportunity of a fair and open competition for it by an impartial examination upon their merits and proficiency, and there would soon be a style of scholarship among the matriculants such as the academy has never yet known.

The discipline of the institution seems so nearly perfect that there appears but little necessity for any change, unless it should be in the substitution of some mode of immediate punishment for mere trivial offences, distinguishing between neglect of duty and immorality of conduct. Now, oftentimes, the most trivial faults involve the general standing of the cadet, and place him in a relatively lower grade in his class than his intellectual acquirements would warrant. In the opinion of the board the system of demerits might be modified greatly to the advantage of the discipline of the institution. The system, as now administered, has often a depressing influence, discouraging attempts at amendment when once a cadet has gone astray. By appealing to fear as the only motive to obedience, it ignores the better and more generous part of human nature, and makes no use of hope as a controlling motive in discipline. The ambitious and high-minded cadet, who, by some slight inadvertence, has incurred a demerit implying no moral delinquency, is under a debt which he is never allowed to pay. No amount of scholarly or soldierly excellence can avail to restore the integrity of his academic position. The board respectfully submit that such a system is not in keeping with the ordinary tenor of human affairs, and is not a wise method of government. We all know what a powerful incentive to gallantry in action is the hope of promotion. Let the same principle be brought to bear in some way upon the restoration to academic rank of youth who have once fallen a little behind, and it will call forth an equal gallantry in achieving academic excellence. There is, assuredly, a certain class of demerits, which, under proper restrictions as to amount, a cadet ought to have the opportunity to wipe out and obliterate from the record by subsequent long-continued and honorable exertion. With this exception we are unable to perceive in what manner the present high state of discipline prevailing at the academy could be improved.

The police of the barracks, the mess-hall, and the hospital appear to be in most excellent condition. The cadet quarters are found to be comfortable, and especially neat and cleanly. The interior arrangements are such as to afford each cadet facilities for retirement and study, at the same time subjecting him to such surveillance as to insure the due observance of the discipline required by the rules of the academy.

In addition to some slight repairs, the barracks require a new and different system of heating and ventilation. In place of the old hot-air furnace and flue, now in use and in a dilapidated condition, some one of the many modern improved systems for heating buildings at a lower and more uniform temperature, either by steam or hot water, should be substituted. We were informed that during last winter many of the rooms were untenable from extreme cold, while others were equally so from excessive heat. Your attention is urgently called to this subject. Nothing can be more important to the health and comfort, the mental and physical development, of occupants of buildings used for study and lodging, than a proper system of heating and ventilation.

The mess-hall and culinary department are in reasonable order and cleanliness.

The hospital commends itself for the good order and cleanliness that exist throughout the entire establishment. The only wants seem to be such as would arise from the modern improvements in hospital furniture. The board would recommend that the hospital be supplied with entirely new and appropriate furniture, such as is now generally adopted for an enlightened treatment of disease.

In the event of an increase in the number of cadets, additional buildings, changes and enlargements, will be necessary for their accommodation.

For the better preservation of the many interesting mementoes and trophies of the several wars in which the nation has been involved, fire-proof buildings should be erected. Additional out-buildings and sinks, with modern ap-



pliances for the use of the hospital and cadet barracks, are strongly recommended as necessary and as proper sanitary measures. We concur in the recommendations heretofore made as to the necessity and importance of the removal of the magazine to some more suitable location, and for the enlargement and embellishment of the cadets' cemetery.

The general condition of the buildings and public property indicates a careful and faithful supervision on the part of the superintendent. The committee on buildings and public lands have given this subject much consideration, to whose report you are respectfully referred for valuable suggestions and data.

The superintendent has the general supervision or administration of the affairs of the institution, and of every matter relating thereto. Of this administration the board feel authorized to speak in the highest terms. The institution is governed with great strictness, and according to the most exact principles of military discipline, and they have no hesitation in expressing their opinion that the great object and purpose of the superintendent is to make the academy one of the most thorough military schools in the world, and to give its graduates scholarship and soldierly qualities befitting the elevated stations to which they may be called.

The academic corps is actuated by the same high principle, and with the support of the other departments of the government the great object of the institution will be attained, so far as can be accomplished by education and military discipline. The board feel constrained to suggest that, in the selection of assistant instructors, in the enforcement of rules and regulations for the government of the academy, and in the decisions of courts-martial, unless in extraordinary cases, the recommendations of the superintendent and professors should be rigidly adhered to by the Secretary of War.

The accounts of the treasurer of the Military Academy appear to be accurately and satisfactorily kept. His books exhibit a full and particular statement of receipts and disbursements, under their appropriate heads, and are highly creditable to that officer for neatness and exactness. The attention of the board was naturally attracted by certain unusual charges against the cadet fund. These charges include, in addition to the cost of clothing, subsistence, books, and stationery, all the expense of furniture, cooking utensils, and the cost of repairs of the same, as also that of the mess-hall, fuel, gas, the wages of the servants, and the pay of the purveyor of the mess commons. Many of these items the board think should be paid from some other fund, by which the cadets should be relieved from a portion of the expenses, and thus place them upon an equally favorable footing with the cadets of the Naval Academy at Annapolis.

In view of the fact that the pay of cadets is barely adequate to meet all the necessary demands for their support, the board think that the corps should be relieved from many of the assessments made upon them for incidental expenses, besides those above enumerated, and especially that for the maintenance of the band stationed at West Point, and would recommend that this band be placed upon the same footing, as to pay and emoluments, as the bands stationed at any other military post. It is quite as necessary, and the importance and magnitude of West Point as a military post require the services of a band as much as any other.

The food served at the mess commons seems to be sufficient in quantity and reasonably good in quality, but lacks variety, especially in vegetables. Great complaints exist, and with some apparent foundation, that the food is improperly cooked and very badly served. The cooking arrangements are of the rudest and most primitive kind, large iron kettles being mainly employed. The coffee cooked in this way is so blackened that it has neither the appearance nor the taste of coffee. Fresh beef of excellent quality is rendered unpalatable and unwholesome by this method of cooking, from which soups are made and served on the same day with the meats. It is a well-established fact in hygiene that

fresh meats are rendered more palatable, digestible, and nutritious when roasted or broiled than when cooked by any other process. Soup should only be occasionally used as a diet, and then made from such meats as cannot be used for roasting. Digestion is better accomplished when the stomach receives food in a consistent and solid state than when too much expanded in a liquid form. We invite the serious attention of the government to this subject of food, involving, as it does, the future health and usefulness, and perhaps the lives, of the cadets.

We feel entirely satisfied, from the assurances the board received, that from the good sense and gentlemanly instincts of the cadets, they will in the future of their own accord, discontinue the cruel practice of "hazing" the plebs, of the fourth class, during the period of the encampment, at least to such an extent as to render it less discreditable to themselves and less annoying and cruel to their unfortunate victims.

The board take pleasure in acknowledging their obligations to the superintendent and members of the academic board, for their courtesy and assiduity in affording them every necessary facility for the intelligent discharge of their duty.

Finally, as touching all questions, affecting all hearts, and promotive of every good, the board would urge the more constant inculcation of that broad and vital patriotism which has been happily defined to include "all the charities of all." The board were pleased to see the accuracy with which the forms, powers and duties of the general government were depicted and described by some of the sections; but they think that something beyond the cold, skeleton analysis of the Constitution should be presented, and that no effort should be spared to cherish and increase among the cadets a fervid feeling of nationality. Avoiding the narrow questions of party and the bitterness of sectional hatred, let these youthful minds grow up with some adequate knowledge of the vast and varied interests of our magnificent country. As its manifold relations of interest and inter-dependence are developed to his mind, the young soldier would learn not only the magnitude of the stake for which he might be called upon to contend in war, but also the nobler and higher lesson that indolence is always inglorious, and that he is not only bound to defend his country in battle, but equally bound to strive, with all the ability that God has given him, to make her great and lovely in peace.

All of which is respectfully submitted.

LEWIS PERRINE, *New Jersey.*  
*President of the Board.*  
 JOHN NEWMAN, *Vermont,*  
*Secretary of the Board.*  
 B. J. BARBOUR, *Virginia.*  
 JOHN L. CAMPBELL, *Indiana.*  
 JAMES H. EMBRY, *Kentucky.*  
 WM. F. JOHNSTON, *Pennsylvania.*  
 R. M. TINDALL, *Mississippi.*  
 S. J. W. LUCKY, *Tennessee.*  
 WILLIAM S. McCAULLEY, *Delaware.*  
 JOHN G. McMYNN, *Wisconsin.*  
 JOHN A. MARTIN, *Kansas.*  
 WM. MARVIN, *Florida.*  
 ANSON MILLS, *Texas.*  
 J. W. NESMITH, *Oregon.*  
 JOSEPH N. RALSTON, *Illinois.*  
 JOSIAH SNOW, *Arkansas.*  
 JOHN D. STEVENSON, *Missouri.*  
 THOMAS G. TURNER, *Rhode Island.*



## REPORT

OF THE

## CHIEF OF BUREAU OF MILITARY JUSTICE.

WAR DEPARTMENT, BUREAU OF MILITARY JUSTICE,

October 8, 1866.

GENERAL: In compliance with the requirements of the Circular of the War Department, Adjutant General's Office, of the 5th instant, I have the honor to submit the following report of the business transacted by this Bureau since the date of my last official communication on the subject, of November 13, 1865.

The operations of the Bureau during this period are briefly presented by the following summary:

1. Number of records of general courts-martial and military commissions received, reviewed, and filed, eight thousand one hundred and forty-eight, (8,148.)
2. Number of special reports made as to the regularity of judicial proceedings, the pardon of military offenders, the remission or commutation of sentences; and upon the miscellaneous subjects and questions referred for the opinion of the Bureau; including also letters of instruction upon military law and practice to judge advocates, reviewing officers, &c., four thousand and eight, (4,008.)

The number of records of military courts received at this Bureau reached a minimum soon after the passage of the late army bill. Since that time these records have continued to increase with the increase of the army; and their number, as also the amount of the other business of the office as an advisory branch of the War Department, will continue to be augmented until the peace establishment shall be completely organized and the new army be fully recruited. The fact that in a large class of important cases commanders of departments and armies are not authorized to execute the sentences in time of peace, and that such cases can no longer be summarily disposed of without a reference to the Executive, will also require from this Bureau a very considerable number of reports to be made to the President which heretofore have not been called for. The aggregate business, therefore, of the office will not be reduced in proportion to the reduction of the military force.

J. HOLT,

*Judge Advocate General.*

Brevet Major General L. THOMAS,

*Adjutant General of the Army.*

REPORT  
OF THE  
QUARTERMASTER GENERAL.

QUARTERMASTER GENERAL'S OFFICE,

Washington, October —, 1866.

SIR: I have the honor to submit the annual report of operations of the quartermaster's department during the fiscal year ending 30th June, 1866.

There were in hands of disbursing officers of the quartermaster's department June 30, 1865, to be accounted for.. \$44, 933, 849 00

They credited as received during the fiscal year from sales ..... \$28, 442, 457 01  
From miscellaneous sources..... 2, 035, 820 43

From requisitions on the treasury..... 30, 478, 277 44  
61, 401, 350 44  
136, 813, 476 88

Paid into treasury during the year..... \$7, 890, 557 93  
In the hands of disbursing officers June 30, 1866..... 5, 527, 122 52  
Disbursed by officers during the fiscal year, as ascertained from their accounts received at this office..... 124, 107, 927 24

Requisitions of this office upon the treasury in favor of disbursing officers during the year were..... \$53, 831, 794 27  
Settlements at the treasury not paid through disbursing officers..... 2, 033, 469 79  
55, 865, 264 06

A financial statement in detail will be found in a table at the end of this report.

Last year it was my duty to set forth in detail the operations and services of the quartermaster's department in supplying and maintaining and transporting the armies of the United States during the active operations of the last great campaigns which vindicated before the world the will and the power of a people educated in freedom to maintain their chosen republican form of government against a most formidable rebellion. It is now my duty to report the continuation of operations inaugurated and described in my last annual report for the distribution to depots and the reduction by sale of the vast accumulation of material of transport, equipment, and supply which had been provided for armies of over a million of men.

The army is being reduced to the basis of the peace establishment fixed by Congress during the late session; and the expenditures for the support of the small army have been reduced accordingly.

The average annual cost of the soldier has increased in consequence of the general advance of prices throughout the country consequent on the increase of the burden of taxation during the war.

The average advance in the cost of supplies necessary for an army, and of the labor to be employed therein, is probably one hundred per cent.

The quartermaster's department provides the means of transport by land and water for all the troops and for all the material of war. It furnishes the horses for artillery and cavalry, and the horses and mules for the wagon trains; provides and supplies forage, tents, camp and garrison equipage, lumber, and all material for camps and for shelter of the troops; builds barracks and store-houses and hospitals; provides and maintains wagons and ambulances and harness for the baggage and hospital and ammunition trains; builds or chartered ships and steamers, docks and wharves; constructs and repairs roads, railroads and their bridges; clears out obstructions in rivers and harbors when necessary for military operations; clothes the army; provides and pays the expenses of transport by railroad, stage, river, and ocean; and is charged in addition with payment of all expenses attending military operations not expressly assigned by law or regulation to some other department.

The supplies which are purchased or manufactured by the ordnance, subsistence, medical and other departments are transported to posts and depots and on the march by the quartermaster's department.

All these duties it is believed have been efficiently performed during the year.

Much of the attention of its officers has been occupied by measures for the sale of surplus material, and for the collection and arrangement in great depots of that which it has not been thought judicious to sell.

Sales have been conducted almost entirely by public auction, and the sums of money realized by these sales are very large, though the prices, under the reaction caused by the sudden cessation of the war demand, are generally much below cost.

There has been reported as received for the sales of property from June 30, 1865, to June 30, 1866, the sum of \$30,478,579 44.

This money has been taken up upon the accounts current and returns of officers making the sales, and either expended immediately in paying the expenses of the service within the districts under their charge, thus lessening the drafts upon the treasury and relieving this department from the pressure of its outstanding obligations, or the money has been deposited in the treasury to the credit of the quartermaster's department, to be drawn out again for the public service upon requisition in the usual form.

At the close of hostilities the department was heavily in debt; vouchers for supplies and services had been given to the public creditor in the absence of remittances from the treasury, and the immediate employment of the funds derived from sales of surplus property in paying these vouchers in the districts in which they had been issued, gave great relief to the public creditor and to the treasury.

The necessity for this immediate use of these funds having ceased on the 7th of June, 1866, under your instructions orders were given to all disbursing officers of the department to deposit in the nearest United States depository, immediately upon their receipt, all funds arising from sales of public property, and to forward to this office certificates of deposit in the usual form. The money thus deposited is placed to the credit of the proper appropriation, and is made available for the public service on requisition in the usual form.

Changes in the limits of the military geographical departments and divisions since the cessation of hostilities and change of duties have made necessary many changes in the stations and duties of officers of this department during the past year.

Lists of officers who during the fiscal year have held the more important positions as chiefs of divisions, geographical or of this office, or in charge as chief quartermasters of armies, of departments and of depots, accompany the report of the 8th or inspection division of this office.

Brevet Major General Robert Allen continued to exercise a general supervision, at Louisville, of the operations of the department in the valley of the Mis-

Mississippi until the reorganization of divisions and departments relieved him from this duty, and he continued to attend to the settlement of the numerous and difficult questions relating to the service under his charge until, on the 3d October, 1866, having been promoted to the rank of assistant quartermaster general under the law of 28th July, he was relieved and ordered to the Pacific coast, to assume the duties of chief quartermaster of the military division of the Pacific, which now embraces the territory of the United States west of the Rocky mountains.

To General Allen the country owes much of the success of the operations for supplying the armies which, having overcome the rebellion in the south and west, were enabled to make the great campaign under Sherman, before which fell the rebellion in Georgia, Florida, and the Carolinas, and whose threatened junction with the armies before Richmond made the final successful operations of the Lieutenant General possible.

Brevet Major General J. L. Donaldson, chief quartermaster of the great depot at Nashville, and supervising quartermaster of the military division of the Tennessee, continued at his post, principally engaged in measures for the collection, preservation, and transport to the north, or the sale, of the vast accumulation of material on hand at the end of the war, and scattered along the extended lines of operations of our forces throughout the central southern districts of the country.

The depots in this region have been broken up; the barracks, hospitals, and storehouses generally sold or disposed of; the material no longer needed has been sold. That which it is desired to retain has been mostly withdrawn from the south and collected in storehouses at Jeffersonville, Indiana, on the Ohio river, convenient for distribution as hereafter needed by river or rail.

General Donaldson has been appointed assistant quartermaster general under the law of 28th July last, and assigned to duty as chief quartermaster of the military division of the Missouri, embracing the country between the Mississippi and the Rocky mountains, in which a large part of the army is being collected for the protection of the frontier and of the emigrants and miners against the depredations of the wild tribes which inhabit and infest the plains and the mountains. The expenses of sheltering, transporting, and supplying the troops in these wild and uncultivated regions are enormous. To control and limit, and reduce them as much as is consistent with the efficiency of the service and the health and comfort of the troops, will be his duty hereafter.

Brevet Major General D. H. Rucker has been appointed, under the law of 28th July last, assistant quartermaster general. He continues in charge of the depot of Washington, which he organized and controlled during the whole war as a base of operations for the armies in Virginia, and also partially for those which operated along the Atlantic coast of the rebel States.

Brevet Brigadier General G. H. Crosman has been in charge since the 7th March, 1866, of the depot of clothing and equipage at Philadelphia. At this post there are stored supplies of clothing, equipage, harness, and other war material which have cost over twenty millions of dollars.

Congress, on the 28th July, made an appropriation of \$146,000 for the erection of additional fire-proof storehouses at the depot within the walls of the Schuylkill arsenal.

Plans and specifications and estimates have been prepared, and bids for the construction of the building have been invited. It is intended to commence its construction as soon as contracts can be made.

Brevet Brigadier General D. H. Vinton has continued in charge of the depot of clothing and equipage at New York, where stores of war material which have cost over \$14,000,000 are now collected.

The depot at Cincinnati has been, during the fiscal year, under the charge of Colonel C. W. Moulton, who resigned on the 6th October, 1865, and who was succeeded by Colonel Roeliff Brinkerhoff, assistant quartermaster of volunteers.

The stores and supplies at this depot are being removed to the depot at Jeffersonville, where they will be stored in buildings the property of the United States, at a great saving of expense, and removed from the danger of conflagration in a great city.

It is desirable that at this point a portion of the ground now leased be purchased, and suitable fire-proof buildings erected for the safe storage of the vast amount of property already at or being removed to this depot. The original cost of the property to be stored at Jeffersonville cannot be less than \$20,000,000.

An appropriation for the purchase of a site and for the erection of fire-proof storehouses at this point would enable the department to take more efficient measures for the security of this property, and to save, in the reduction of watchmen, officers, and guards, the full interest on the expenditure.

Brevet Major General Rufus Ingalls, chief quartermaster of the armies operating against Richmond, continued, after the cessation of hostilities, to discharge the duties relating to the settlement of deferred and disputed accounts and claims and other business relating to his charge, until, on the 4th May, 1866, he was ordered to make a tour of inspection along the lines of operation and supply from the Mississippi river to the Pacific ocean, and in the departments upon that coast, with a view to the improvement of the routes and system of supplying our armies in this expensive region.

By advices just received I learn that this inspection is nearly completed, and that he will set out on his return in the course of the current month. No reports have been received from him since he crossed the mountains.

Brevet Major General Stewart Van Vliet has continued in charge of the operations of the department at New York, other than those relating to the clothing and equipage depot, which has been under charge of General Vinton.

Brevet Brigadier General S. B. Holabird has been relieved from duty in the department of the Gulf and ordered on duty in this city, in order to give him an opportunity to settle his accounts, which have involved, since his assignment to duty as chief quartermaster of General Banks's army, very heavy disbursements and responsibilities on account of military and civil operations at a remote station, with which communication was difficult. He has been, as a disbursing officer, made responsible during the war for the safe-keeping and application of large sums of money collected by military commanders in the southwest, as provost marshal funds, sequestration funds, and military contributions, in addition to his duties as chief quartermaster and disbursing officer of the quartermaster's department in the southwest. In all these duties his capacity, industry, and integrity have been conspicuous, and I am gratified that they have been recognized and honored by brevet promotion.

Brevet Colonel E. B. Babbitt has continued to have charge, as chief quartermaster of the military division of the Pacific, of the operations of the quartermaster's department on the Pacific coast. The troops are scattered in small bodies, from the mountains to the coast, among numerous posts difficult of access, and the service of their supply, shelter, and transportation has been very costly.

Brevet Brigadier General L. C. Easton, quartermaster, having been relieved from his duties as chief quartermaster of the armies of General Sherman in the field by the disbanding of those armies, accompanied the general to St. Louis, and was assigned to duty as chief quartermaster of the department of Missouri and of the military division of the Mississippi, commanded by General Sherman. His duties required him to supervise the operations of the quartermaster's department in the supply and establishment of the posts throughout the country from the Mississippi to the Rocky mountains. He continued in this position at the end of the fiscal year.

The officers, regular and volunteer, who have assisted me in charge of the



several divisions of this office, have continued to discharge their duties with the ability and fidelity which have heretofore been acknowledged.

The reduction in the force of volunteer officers in the quartermaster's department has continued. It has not been possible yet to discharge the whole of these officers. Some are on duty in the Freedmen's Bureau, and the settling up of the war accounts, the collection and removal to national cemeteries of our dead, and the great number of posts of importance still held by troops requiring bonded disbursing officers, have made it necessary to retain some in the service of the quartermaster's department. The number of volunteer assistant quartermasters in service on the 1st July, 1865, was 553, and on the 30th June, 1866, 106; there are in service now only 69, and several of these are under orders to repair to their homes to be honorably discharged.

The volunteer officers of the quartermaster's department have generally been distinguished by faithful and efficient service. Some of them have been placed in positions of great difficulty and responsibility, having immense sums of money committed to their control. They have contributed their full share to the success of the cause, to aid which they abandoned their occupations and homes. Very few have proved unfaithful to the trusts committed to them. Many have won distinction, and have been honored by brevet promotion and by assignment to stations of rank and of such emolument as the law permitted.

I submit lists of officers who have been honorably recognized by brevet, and also lists of those who, during the fiscal year, have held stations upon which Congress has conferred additional rank.

#### HORSES AND MULES OF THE ARMY.

The first division of this office has charge of the supply of horses and mules for the military service. It has continued during the fiscal year under charge of Brevet Brigadier General James A. Ekin. To this division are also referred for examination all claims for payment for horses and mules alleged to have been supplied for the use of the army, or to have been taken for such use with or without consent of owners.

The sale and disposal of the large number of animals turned in by the disbanding armies have been under charge of this division. Few purchases of animals have been reported during the fiscal year, excepting in the department of California, in which contracts were made for 150 cavalry horses, at an average price of \$95 58; 146 artillery horses, at an average price of \$227 94; 750 mules, at an average price of \$154 65 in gold coin, or its equivalent in currency. There were on hand at the principal depots of animals on the 30th June, 1865, 14,917 cavalry horses, 3,475 artillery horses, 36,169 mules. Such as were needed for public use were retained, but the greater part of them have been sold at public auction. In addition to these, large numbers of horses and mules turned in since the 30th June, 1866, by the disbanding armies, or become surplus by the closing of depots, have also been sold at auction, with great advantage to the treasury and to the agricultural interests of the country, to whose industry many animals withdrawn during the war have been returned.

Between the 1st May, 1865, and the 2d August, 1866, to which time the statements have been made up, there were sold at public auction—

104,474 horses, for.....	\$5,630,417 39
102,954 mules, for.....	7,685,225 96
Sales of horses, mules, and oxen during the same period, of which the numbers have not been yet reported, have produced....	1,953,432 19

Total sale of animals reported May 1, 1865, to August 2, 1866.	<u>15,269,075 54</u>
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The average price per horse has been \$53 89; the average price per mule has been \$74 64.



The sales have been made at many different points throughout the country, and prices have varied with the locality and the condition of the animals, many of which have been sold as turned in, broken down and unserviceable.

When it has been possible, without too great expense, to hold the animals for a time to feed and recuperate them, this has been done with good effect upon the price. But the aim of the department has been to reduce its expenses and its stock as rapidly as possible without waste.

The highest average price for a lot of horses was obtained at a sale at Harrisburg, \$184 82; the highest price for a herd of mules at Memphis, \$204 46; the highest price received for a single horse was for a horse sold at Chester, Pennsylvania, \$280; the highest price for a single mule was at Harrisburg, \$325. Many broken down horses were sold at fifty cents to five dollars, some of which recovered and proved valuable, while many of them died within a few hours after the sale.

There were sold at private sale at the Giesboro' depot, during the fiscal year, 280 horses for \$37,237 50, an average price of \$132 51.

There were on hand at the several depots on the 30th June, 1866, 3,829 cavalry horses, 816 artillery horses, 10,912 mules.

Attempts were made to collect the large number of horses scattered throughout the country on the lines of march of the armies, abandoned or loaned to the people for the purpose of enabling them to begin the cultivation of their lands, laid waste during the war. Little success has attended these efforts, which are detailed in the report of the first division, herewith.

There were reported in service on the 30th June, 1865, 59,303 cavalry horses, 9,843 artillery horses, 97,358 mules, 11,282 unserviceable horses, 11,178 unserviceable mules.

On the 30th June, 1866, there were reported in service 8,891 cavalry horses, 566 artillery horses, 15,362 mules, 809 unserviceable horses, 719 unserviceable mules.

#### CLAIMS RELATING TO ANIMALS.

Of these there were on file on July 1, 1865, 1,382, for.....	\$551, 169 00
There were filed during the year, 10,114.....	2, 712, 314 69
Total.....	<u>3, 263, 483 69</u>
Of these there were approved, regular purchase vouchers, 802.	\$132, 330 00
Approved and recommended to the Third Auditor for settlement under act of July 4, 1864, 109.....	50, 702 25
	<u>183, 032 25</u>
Rejected and suspended, 2,711.....	788, 901 11
Not yet disposed of, 7,874.....	2, 291, 550 33
Total.....	<u>3, 263, 483 69</u>

Among the claims on file not yet adjudicated are many from enlisted men for the value of their private horses turned over to the United States after the passage of the act of June 20, 1864, relating to the transfer to the United States of cavalry horses of some of the regiments enlisted under the condition that the men should furnish their own horses. These transfers appear to have been made in the field, and in the hurry and occupation of military operations the records and proofs are very irregular and imperfect. Endeavors are being made to procure the necessary evidence of identity, ownership, and accountability of property, to enable the department to do justice between the treasury and the soldiers interested.

General Ekin takes occasion to acknowledge the services of the officers who have assisted him in the management of the affairs of the first division, to whom much of the regularity and promptness which have characterized its operations are due.

#### CAVALRY BUREAU.

A report from General Ekin of the operations of the quartermaster's department in connection with the cavalry bureau, and especially of the construction and operations of the principal cavalry depot at Giesboro', is submitted herewith. It gives a history of probably the largest depot ever organized for the supply of animals to an army.

To systematize and regulate the purchase and supply of horses to the cavalry, then actively engaged in the field in operations attended with great destruction of horses, a cavalry bureau was organized under General Orders No. 236, War Department, Adjutant General's Office, July 28, 1863.

The principal depot for the supply of horses for the armies in the Atlantic States was established at Giesboro', on the eastern branch of the Potomac, opposite the Capitol. Other depots were established at St. Louis, Missouri; Greenville, Louisiana; Nashville, Tennessee; Harrisburg, Pennsylvania, and Wilmington, Delaware. The principal depot was at Giesboro', occupying a farm of about 625 acres.

Within three months after commencing operations in the summer of 1863, provisions were made for the care of 15,000 animals, and within six months the depot had capacity for 30,000. The largest number present at any one time was about 21,000. Stables, stock-yards, corrals, forage-houses, workshops, storehouses, mess-houses, and quarters for the operatives and officers were constructed. A large steam mill for grinding grain and cutting hay and straw and steaming feed was erected. Wharves with berths for three large steamships, water-works with reservoir, 27,000 feet of mains and steam pumps for raising the water, and all the other conveniences for the safe-keeping, handling, and feeding of 21,000 animals, were constructed. The estimated cost of the buildings and other constructions is \$1,225,000. There were in all received, issued, died, or sold at this depot to the 30th of June, 1866, 208,659 horses, of which 196,036 were cavalry horses. 25,958 horses died at the depot, most of which had been returned from the armies in the field broken down and disabled. 50,372 horses were sold from this depot to the 30th of June, 1866, at which time 32 horses remained on hand.

The depot has been since entirely broken up, the property sold, and the site returned to the owners from whom it had been rented.

The sales of property at this depot have realized the following sums:

Animals, living.....	\$1, 251, 722 73
Animals, dead.....	27, 213 16
Manure.....	9, 836 50
Stores and supplies.....	34, 493 74
Buildings, &c.....	42, 391 49
Total.....	<u>1, 365, 657 62</u>

#### CLOTHING AND EQUIPAGE.

The second division of this office, under charge of Brevet Brigadier General A. J. Perry, assistant quartermaster, has charge of the purchase and care of the clothing and equipage of the army.

The manufacture and purchase of clothing ceased with the termination of the

war, and all contracts which the United States could retire from without violation of public faith were discontinued.

The expenditures of the year in payment for supplies contracted for and delivered, but not settled for before the beginning of the fiscal year, have been large. Its new expenditures have been small. Its efforts have been principally directed to the collection, in large depots, of the stores which were at the advanced bases of operations in the field or in transit to the seat of war; to their inspection, proper arrangement, and safe packing, and to the sale of such articles as were irregular, damaged, or useless. The regular material of army clothing and equipage has been generally transferred to the depots, selling only that which it was cheaper to sell than to transport and store. The stock on hand is exhibited in tables, which accompany the report of the second division. It is large enough to last the present army for many years, and when the market is less overstocked than it has been during the past year it will doubtless be proper to sell a considerable portion of the material on hand. This material would be sacrificed if sold now.

No appropriation was asked for this branch of the service during the past fiscal year, and none will be needed for the next year.

Much property, damaged and irregular, has been transferred to the Freedmen's Bureau, to enable it to relieve the distress among refugees and freedmen.

Auction sales of damaged and irregular clothing and equipage, during the fiscal year, have produced the sum of \$902,770 45.

The principal depots at which this material is stored are at New York, Philadelphia, Washington, Cincinnati, and Jeffersonville, to which latter place, in order to save expense of storage and risk of destruction in the warehouses of a great city, the property at Cincinnati is being transferred.

The erection of fire-proof storehouses, and the acquisition of a site for a permanent depot at Jeffersonville, are earnestly recommended. The value of the public property there stored in wooden temporary buildings erected for storehouses and hospitals during the war is many millions, and the injury to be done by a fire, in spite of all vigilance and provision possible, is enormous.

To the tables which accompany the report of General Perry, herewith submitted, I respectfully refer for detailed and exact information as to the extent and condition of the supplies on hand.

#### CLAIMS FOR CLOTHING AND EQUIPAGE.

Few supplies of clothing and equipage have been obtained from the hostile districts. Hence the number and amount of claims presented to this division under the law of July 4, 1864, are less than in the other divisions.

General Perry reports—

Forty claims received amounting to . . . . .	\$13, 596 69
Ten recommended for settlement . . . . .	6, 720 09
Eleven rejected . . . . .	2, 255 07
Nineteen under consideration and investigation . . . . .	4, 621 53

By the temporary employment of a large number of clerks, chiefly honorably discharged officers and soldiers, and the organization of a night force in this division of the office, which is charged with the examination and transmission to the Second Auditor for final settlement of the returns of clothing and equipage made monthly by almost every officer in the service, the returns of this kind received during the war have been all examined, leaving only the current business of this branch, the examination of the returns of officers still in service, to be attended to.

The greater part of the clerks employed on this work have been discharged or transferred to the other branches of this office, and the work is now kept up to date.

In this business there were 436,129 returns examined during the year; 435,816 returns transmitted to the proper auditor for final settlement; 828,668 entries were made in the books of record; 170,221 letters were written and despatched to officers.

The early completion of the examination and settlement, so far as this office is charged therewith, of these war returns for clothing and equipage is creditable to the officer in charge.

#### OCEAN TRANSPORTATION.

The third division of this office has charge of the service of military transports on the ocean and lakes.

On the 1st of July, 1865, there were in employment, five hundred and ninety vessels, with an aggregate tonnage of 193,936 tons, at a daily estimated cost of \$82,405.

On the 1st of January, 1866, there were two hundred and one vessels, 65,936 tons, costing \$16,045.

On the 30th of June, 1866, there were fifty-three vessels, tonnage 14,163, costing \$3,000; showing a reduction of \$79,405 in the daily expenses during the fiscal year. Most of these vessels have since been put out of service.

The necessary sea service is now done by the regular established commercial lines, except in cases of important and hasty movements, for which it is still sometimes necessary to make special charters, and for some small local transportation on the southern coast where it has not yet been possible to dispense entirely with transports.

In the early part of the fiscal year the 25th army corps was brought north from Texas, and other large bodies of troops, mustered out of service in the southwest, were returned to the north by sea. These movements delayed the discharge of the ocean transports in service at the termination of hostilities, and involved heavy expenditure.

Sea transportation was furnished during the year for one hundred and thirty-one thousand five hundred and eighty-one (131,581) men, according to reports received.

From August to October, 1865, twenty-eight hundred and thirty-two (2,832) men of the fourteenth United States infantry were transported from New York to San Francisco by the regular California steamship lines.

In August, 1865, six hundred and fifty-one officers and men of the second United States artillery were moved from Baltimore to Aspinwall in United States transports, and transferred by the isthmus railroad to Panama in time to take the regular California steamer on the Pacific for San Francisco.

Between October, 1865, and April, 1866, one thousand and forty-two (1,042) men of the sixth United States cavalry were transported from New York to New Orleans by the regular steamship lines, and five hundred and forty-nine (549) of the fifth United States artillery were moved from New York to Fort Monroe and Key West and the Tortugas by the same mode of transportation.

The troops who sailed from New York in October, 1865, were exposed to a gale to be long remembered for its severity. It drove ashore every vessel in the harbor of Key West, except the Massachusetts, a naval storeship. None of the vessels carrying troops were lost, though several of them were driven into port in distress.

Between November, 1865, and March, 1866, fourteen hundred and eighty-four (1,484) men of the first United States cavalry were moved from New York, part of them to New Orleans and part to San Francisco.

In December, 1865, six hundred and sixty-eight (668) of the same regiment were transported from New Orleans to Aspinwall, in the United States transport steamer McClellan, crossed the isthmus by railroad, and proceeded to San Francisco by the regular Pacific steamers.

In January, 1866, there was a movement of four companies of the fifth United States cavalry, with horses and equipments, from Baltimore and Washington to Charleston, South Carolina, by sea, in a chartered transport. This movement was delayed by ice obstructing the navigation of the Potomac.

Large numbers of troops and large quantities of material have been transported during the year between Baltimore, Fort Monroe, Norfolk, and Richmond by the bay lines of steamers.

In March, the United States transport steamer Illinois, of 2,123 tons, was, under a resolution of Congress, turned over to the sanitary authorities of the city of New York for a hospital ship for cholera patients. Some steamers, sail vessels, and boats, and other material, have also been furnished for the military quarantine ordered upon the Atlantic coast. The steamer Empire City has been repeatedly offered at public sale, but the sums offered for her have been so much less than her cost to the United States that it has not yet been considered proper to accept any offer received. The sales of steamers and property relating to ocean transportation, during the fiscal year have produced \$1,767,844 69.

The sales were made at auction, and it is supposed that a fair commercial value was obtained for most of the vessels sold. They had generally been purchased by the United States after some years' private service, and they were kept in constant and severe use while in the military service. Steamships deteriorate more rapidly than almost any other property, and unless there is regular and constant employment for them they are very costly.

The accounts for nearly all the service of this division are transmitted to this office for examination before payment, and no separate statement of what are generally styled claims has been prepared.

The claims and regular vouchers of all kinds received and acted upon by the division are reported as 2,052, amounting to \$9,567,620 54.

Tabular statements of vessels chartered and employed; of vessels owned by the United States; of property sold; of vessels captured during the war; of vessels lost during the war; of claims received, audited, and rejected in the division during the fiscal year, accompany the report of Brevet Brigadier General G. D. Wise, who has had charge during the year, and are respectfully referred to for more detailed information.

#### INLAND TRANSPORTATION AND TELEGRAPH.

At the close of the last fiscal year, 30th of June, 1865, the armies were generally *en route* to their homes. Most of the regiments of the army of the Potomac were at the rendezvous in the several States preparing for muster out and for transportation thence to their respective homes.

The army of General Sherman was collected at Louisville, and large bodies of troops were in Texas, in the Indian territory; and in garrisons throughout the rebellious States.

The larger part of the actual transportation consequent upon disbandment of the army, and the settlement of the accounts therefor, have fallen within the fiscal year ending June 30,, 1866.

Transportation has also been furnished large numbers of rebel prisoners to their homes, and for large numbers of freedmen and refugees, under requisition of the Bureau of Refugees and Freedmen.

A very heavy expenditure has attended the occupation of the country on the route to the new mining regions of Montana and Idaho.

Troops have been sent with a year's supplies to occupy posts on the head-



waters of the tributaries of the Missouri river, and to establish themselves up the river at the head of navigation.

Many steamboats and large trains have been employed in this movement, the largest yet made into the wilderness; but the returns from those remote stations are slow in transmission, and definite accounts of the expenditure, and of its results, are not yet available.

The number of passengers and the quantity of stores transported inland during the fiscal year, as compiled from the reports of officers, is given in detail in a table accompanying the annual report of Colonel Alexander Bliss, in charge of the fourth division.

The general results may be stated thus:

Number of passengers transported from all posts.....	1, 016, 300
Number of animals.....	138, 389
Number of wheeled vehicles.....	10, 376
Stores of all kinds.....	tons, 420, 000

Payments made during the fiscal year, including payments for service of previous fiscal years:

By railroad .....	\$13, 315, 056 98
By rivers .....	5, 268, 490 37
By stage .....	589, 490 65
By wagon .....	3, 314, 495 10
Turnpike tolls.....	71, 599 12
Bridge tolls .....	7, 394 75
Ferry tolls.....	27, 291 60

Total .....	22, 593, 816 57
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This amount is approximate. Not all of the accounts of officers who have made payments for inland transportation have been finally settled, and some officers have failed to make distinct reports of their payments on this account. The amount of expenditure during the year, therefore, will exceed that in the table derived from the reports thus far received and examined. The bulk of the war accounts for transportation up to January 1, 1866, have been settled and paid.

There remain in the division of the war accounts few, besides claims of southern railroads, unadjusted on account of imperfections in the proof submitted.

The current business is now promptly despatched.

A final report upon the military railroads, by Brevet Brigadier General D. C. McCallum, general manager thereof, accompanies this report. It gives a consolidated statement of the operations and expenditures on account of military railroads, *i. e.*, railroads operated by the United States during the war. Tables accompany the report, which will be of value for history, and for reference hereafter in settling claims which will be presented to the government on account of these operations.

The number of railroads during the war, under control of the military authorities, operated and known as military railroads, was .....	50
The total aggregate length, in miles .....	2, 630½
Total number of engines.....	433
Total number of cars .....	6, 605

Total expenditure in repair, equipment, and operation of military railroads, \$45,367,480 27.

Having in the last annual report given a general account of the operations of these roads, I now refer for more detailed information to the reports of General McCallum and of Colonel Bliss herewith, and to the tables attached to this report.



These railroads have all been restored to the companies, or to the boards of public works in the States in which they are located, excepting a military railroad on the coast of Texas, which has been sold after inviting bids therefor by public advertisement.

Tables herewith give full statements of the sales of military railroad property. It appears that there was received from cash sales during the

year .....	\$3, 466, 739 33
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The total sales on credit are .....	\$7, 444, 073 22
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Interest to June 30, 1866 .....	326, 086 01
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	<u>7, 770, 159 23</u>
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Payments for principal and interest .....	\$1, 200, 085 18
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Unpaid on June 30, 1866, principal and interest.....	6, 570, 074 05
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Under Executive orders a statement of cost of repairs and improvements by the United States upon the railroads in the military division of the Tennessee has been prepared under the direction of Major General G. H. Thomas, commanding, who was charged by that order with the disposal of those railroads and of their equipment.

A tabular statement, herewith, estimates the amount at \$12,115,881 11.

Some of the railroads have promptly met their engagements with the United States; others have failed entirely. The most conspicuous of these latter is the Nashville and Chattanooga railroad, whose original debt was \$1,566,551 73. Charging interest and crediting all payments and earnings of this road to June 30, 1866, its debt to the United States was then \$1,493,204 07.

The steamboats, barges, and other vessels owned by the department on the rivers of the west have been sold.

There was received from such sales during the year.....	\$857, 213 00
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From sales of steamboat coal belonging to the inland transportation division.....	295, 682 92
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Total sales in fiscal year .....	<u>1, 152, 895 92</u>
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A table, prepared by General Parsons, giving the losses of steamboats on the western rivers during the war, accompanies this report. It will be valuable for future reference.

The number of boats lost by operations of war is reported at 143; total value, \$3,900,000.

During the fiscal year 262 vessels were employed by the department on the western rivers; at a cost of \$3,193,533 28. None are reported remaining in service at the end of the fiscal year.

The principal expenses for wagon transportation are in the Indian country, west of the Mississippi. Most of this work is done by contract, which experience shows to be both cheapest and most satisfactory.

Trains must be kept up at the principal posts to meet emergencies, and to accompany marching bodies of troops, but the regular movement between depots of supplies is made by contractors, who use generally ox teams.

The rates of the present contracts are much reduced from those of last year.

The rate on route No. 1, from the Missouri river to posts in northern Colorado, Nebraska, Dakota, Idaho, and Utah, per hundred pounds, per hundred miles, is \$1 45; on route No. 2, from the Missouri river to posts in southern Colorado,

Kansas, and New Mexico, \$1 38; on route No. 3, from Fort Union, New Mexico, to posts in that Territory, in Arizona, and in western Texas, \$1 79.

The total number of pounds transported by wagons during the fiscal year is reported at 81,489,321, or 40,774 $\frac{6}{10}$  tons, at a cost of \$3,314,495.

There are some very costly routes in the military division of the Pacific, west of the Rocky mountains, and in Arizona, by which supplies are transported from the Pacific coast. Most of this work is done by United States trains, and its actual cost is not reported.

The expenses of the troops on that coast, in consequence of the difficulty and cost of transportation, are very heavy. The Oregon Steam Navigation Company, which is extending its lines on the Oregon and its tributaries, is improving the means of transportation and reducing its cost in the district to which its operations are confined.

#### MILITARY TELEGRAPHS.

The report of Brevet Brigadier General A. Stager, chief of United States military telegraphs, exhibits the operations of this branch of the service during the year.

The whole length of military telegraph constructed during the war was 15,389 miles; number of miles in operation at any time during the fiscal year ending June 30, 1866, was 8,334.

At the close of the fiscal year but two officers remained on duty in this department. There were employed on June 30, 1865, 1,437 persons, and on June 30, 1866, 318.

The military telegraph lines have all been disposed of, and nearly if not quite the whole of the material has been sold. The total expenditure during the war, is ..... \$3,219,400 00  
During the fiscal year..... 567,637 00

#### ACCOUNTS.

The accounts and claims received in this division during the year, exclusive of officers' money accounts sent here for administrative examination, amount to..... \$5,067,425 57  
Disposed of..... 3,771,731 57  
Unadjusted July 1, 1866..... 1,295,694 00

The amount of money accounts of officers received for examination in the division during the year has been..... \$24,997,097 72  
Examined and returned..... 22,590,852 19  
..... 2,406,245 53

The tables accompanying the report of Colonel Bliss, in charge of the fourth division, are valuable records for reference.

#### FORAGE, FUEL, AND REGULAR SUPPLIES.

The fifth division, under Brevet Brigadier General S. L. Brown, has charge of the supply of forage, fuel, and stationery.

At the termination of hostilities large quantities of forage were in depot, or in transit to the field of operations.

On the first of July there were in store, since consumed: 1,612,170 bushels of corn, 2,527,011 bushels of oats, 26,139 tons of hay, and 1,207 tons of straw.

During the year there have been purchased and issued 1,690,621 bushels of corn, 2,534,139 bushels of oats, 110,508 tons of hay, and 1,516 tons of straw, making a total consumption during the year of 3,302,791 bushels of corn,

5,061,150 bushels of oats, 136,647 tons of hay, and 2,723 tons of straw. Nearly one-half the year's consumption has been supplied by the stock on hand on the 1st July, 1865.

The forage purchased during the year has been obtained whenever practicable by public advertisement and contract. The quantity purchased in open market has been comparatively small.

Full and exact returns have been required, making known to this office the exact condition of the forage supply at all accessible posts.

The Colorado Territory, about Denver, is beginning to supply forage for posts dependent upon Denver at rates cheaper than it has been heretofore transported from the Missouri river, but the extension of our lines of occupation into remote mountain districts, and into the wild and uncultivated regions of Arizona, and on the Gila and Colorado of the West, forbid any expectation for some years to come of any reduction in the heavy expenditures for foraging the armies while their strength remains as at present.

#### FUEL.

There was consumed during the fiscal year of—

Bituminous coal.....	113,497 tons
Anthracite coal.....	86,808 tons.

Total.....	200,305 tons.
------------	---------------

Of which 88,710 tons were on hand July 1, 1865. The quantity of wood consumed cannot be reported. By far the greater part of it was cut by the troops, not purchased by contract.

Explorations for peat, with a view to reducing the cost of fuel at some of the interior posts on the arid plains east of the Rocky mountains, have resulted in its discovery near Fort Sedgwick, and also near Denver City. A machine has been sent to Fort Sedgwick, at which place the cost of fuel has been greatest, but I am not yet advised of the machine being put in operation.

#### STATIONERY.

The greater part of the stationery furnished the troops has been supplied from that which was in depot at the end of the war, which has been transferred from one post to another to meet the wants of the service.

#### CLAIMS.

Under the law of July 4, 1864, a large number of claims for forage and fuel taken by the troops in the field of military operations have been referred to this division.

There were in hand July 1, 1865 669 claims, for.....	\$699,814 00
Received during the year 4,421.....	3,091,508 00

Total, 5,090 claims, for.....	3,791,322 00
-------------------------------	--------------

As follows :

For forage .....	\$2,147,741 00
For fuel .....	1,615,701 00
For straw .....	19,390 00
For stationery .....	8,490 00
	<u>3,791,322 00</u>

There have been referred to the Third Auditor, with recommendation for settlement, 400 .....	\$170,890 00
Rejected, 1,999 .....	1,893,559 00
In hand, under investigation and examination, 2,691 .....	1,726,873 00
	<u>3,791,322 00</u>

## VOUCHERS.

There were in hand July 1, 1865, 1,102 vouchers, amounting to....	\$179,387 00
Received in fiscal year, 5,351 .....	819,917 00
	<u>999,304 00</u>
Of these there have been approved and passed, 2,449 .....	\$457,617 00
Disapproved, 1,408 .....	219,778 00
In hand, under examination, 2,596 .....	321,909 00
	<u>999,304 00</u>

## HOSPITALS AND BARRACKS, BUILDINGS, LANDS AND MILITARY CEMETERIES.

To the sixth division is referred all business relating to hospitals, barracks, storehouses, and other buildings; all questions relating to lands, sites of buildings, and posts or military reserves, and also all business relating to interments.

During the past fiscal year few buildings have been erected. Repairs have been made upon buildings which have been reoccupied in the re-establishment of northern garrisons, and some building has been necessary for the new regiments at the depots of recruiting and organization.

Shelter for the troops establishing new posts in the western Territories, or permanently garrisoning the older posts at which the temporary buildings erected during the war have fallen into decay, is being provided under the personal supervision of Lieutenant General Sherman, at whose disposal a sum of one million of dollars has been placed for this special purpose.

These troops arrive late at their destination, and delay to make the usual preliminary reports and estimates before commencing the work so distant from Washington, it was considered, might result in much suffering in an inclement climate during the coming winter.

This expenditure, however, falls within the limits of the fiscal year ending 30th next June.

The number of buildings, storehouses, barracks, sheds, wharves, &c., reported as erected during the fiscal year by officers of this department, is thirty-six, at a cost of \$56,366 67.

There have been sold during the fiscal year 4,395 structures, barracks, hospitals, storehouses, sheds, stables, corrals, wharves, and docks, producing \$447,873 14.

## CLAIMS.

Claims arising out of the occupation of grounds and buildings for military purposes, for purchase or seizure of building materials, for commutation of quarters, and for extra-duty pay, are referred to this division.

There have been in the division during the year 4,947 claims, for.	\$3,212,443 38
There have been approved and referred, with recommendation for settlement, 1,104, for .....	314,453 31
Rejected, 2,606 .....	1,543,465 56
On hand under investigation, 1,237 .....	1,354,524 96

## NATIONAL CEMETERIES.

Brevet Brigadier General J. J. Dana, in charge of the division, submits a separate report upon the operations for the collection and interment in national cemeteries of the dead scattered over the length and breadth of the land. Much has been accomplished, but much remains to be done. For detailed information I refer to the report of General Dana, and to those from General Donaldson and the officers charged in the east and west with the discovery and transfer of the bodies of the dead to the various national cemeteries already established, or which it is intended to establish hereafter.

Throughout the southern States the work has been delayed by the heat of the weather, the fear of an epidemic of cholera, and the unsettled state of the country. The field has been explored, however, sites for cemeteries selected, and some of these have already been nearly completed. Forty-one (41) national cemeteries had been established at the end of the fiscal year. Ten (10) more had been determined on.

Four hundred and twelve (412) cemeteries, not the property of the nation, contained remains of soldiers.

The national cemeteries contained, on June 30, 1866, the remains of 104,528 loyal soldiers. When all the national cemeteries are completed they will contain remains of 249,397.

There were reported as buried, not in national cemeteries, the remains of.....	237, 142
It is reported that it is possible to identify the graves of.....	202, 761
That there are of graves which cannot be identified.....	138, 901
The total number of remains reported as of loyal soldiers is....	341, 670
Of remains of rebel prisoners.....	13, 657
Bodies reinterred to June 30, 1866.....	87, 664
To be moved and reinterred hereafter.....	135, 881
Total number of reinterments made and yet to be made.....	223, 545

The aggregate expenditures reported in this service to June 30, 1866, are.....	\$1, 144, 791
Future expenditures to complete the work.....	1, 609, 294

Total cost of national cemeteries, and collection, transfer, and reinterment of remains of loyal soldiers.....	2, 754, 086
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The average cost thus far of all transfers and reinterments has been \$9 75.

Lists of the dead in the various cemeteries are published in General Orders for distribution to the principal newspapers in each congressional district, to adjutant generals and agents of States, and to the principal public libraries of the country. Six such lists have been published containing the names of thirty-two thousand six hundred and sixty-six soldiers buried in cemeteries in the District of Columbia, on the battle-fields of Virginia, at the prison pen of Andersonville, Georgia, and in Texas. As these lists are completed, it is proposed, with your approbation, to continue their publication. They form an invaluable record for surviving friends and relatives.

A design has been adopted for a small cast-iron monument, to be protected from rust by a coating of zinc, to have, in raised letters cast in the solid, the name, rank, regiment, and company of each soldier or officer. One of these will be placed at the foot of every grave, and will remain when the wooden head-boards first set up decay and perish. To this work, which commends itself to the sympathy of all loyal people, several officers have devoted great attention. I may particularly name General Donaldson, chief quartermaster, military

division of the Tennessee, and Captain E. B. Whitman, assistant quartermaster of volunteers, who has acted under his direction; Brevet Lieutenant Colonel J. M. Moore, assistant quartermaster United States army, who has had charge of military cemeteries in this vicinity and in Virginia and Maryland; Colonel and Brevet Brigadier General Ludington, chief quartermaster military department of Washington, and Brevet Major C. W. Folsom, who has had charge of the records, reports, and correspondence relating to this subject in the sixth division of this office.

#### MILITARY TRAINS.

The abundant material of the military trains of the armies has supplied nearly all requisitions in this division during the year.

There have been sold during the year 12,534 army wagons, 1,457 two-horse wagons, 441 spring wagons, 1,459 wagons of irregular models, 3,432 ambulances, 63 carts, harness for 112,607 animals, 32 travelling forges, 788 portable forges.

#### CLAIMS.

Claims for wages due deceased operatives and employés of the quartermaster's department, cotton claims, and miscellaneous claims, are referred to the seventh division.

The total number on file during the fiscal year has been	4,668, for	\$1, 524, 446 90
Of which there have been passed, 1,837 .....		282, 312 42
Rejected, 1,946 .....		1, 145, 502 18
Still under investigation, 885 .....		96, 632 30

Among the claims filed were 20 cotton claims, for \$267,405 65, all of which were rejected.

From July 1, 1866, end of the fiscal year, to October 1, 1866,		
there were presented to the seventh division 1,043 claims, for		\$228, 849 85
Of which there were passed, 342 .....		24, 129 52
Rejected, 643 .....		194, 844 92
Still under investigation, 58 .....		9, 875 41

#### DIVISION OF INSPECTION.

The eighth division of this office has charge of inspection of the quartermaster's department. It has continued during the fiscal year under charge of Colonel and Brevet Brigadier General G. V. Rutherford, whose report gives in detail the operations of this important branch of the service.

The officers who have been on inspection duty have accomplished a great amount of work during the year, pointing out the places and mode of effecting great economies. Inspections by Brevet Brigadier General Rutherford, chief of the division, and by Brigadier Generals J. D. Bingham and James F. Rusling, have been particularly extensive, thorough, and useful.

General Rusling is now engaged upon a minute inspection of the posts on the route to San Francisco, and of those in the military division of the Pacific, and his reports give clear and precise information of the operations, necessities, and defects of the service of this department, in those remote districts, which are especially valuable. His various inspections in the States included in the military division of the Tennessee resulted in great reduction of materiel and personnel, and in great consequent economies.

The names and services of all inspectors of the department, and of all officers who, during the year, have acted temporarily as inspectors thereof, under special orders, are detailed in the report of General Rutherford herewith.



Two hundred and thirty-eight reports of inspection were received at the office during the fiscal year. The reduction of the army and muster out of officers have dissolved the boards for examination of officers of the department. Thirty-one officers were examined during the fiscal year, of whom nineteen were found qualified, and twelve reported not qualified for the service.

The department contained at the close of the fiscal year—

Regular officers.....	78
Volunteer officers.....	106

At the beginning of the fiscal year the number was—

Regular.....	79
Volunteer.....	553

The number of volunteers has since been reduced to sixty-nine, and several are under orders preparatory to honorable discharge.

Careful and systematic records of the business of the division have been kept, and the records of military service of officers of the quartermaster's department, both regular and volunteer, have been extended and improved during the year.

Various lists and tabular statements relating to the military history and services and promotion of officers who have served in the quartermaster's department during the fiscal year, accompany the report.

From reports received, tabular statements of quartermaster's stores and property sold during the year have been compiled in this division to the gross amount of \$20,263,600 49.

These tabular statements are too voluminous to be printed with the annual reports, under the provision of the law regulating printing passed at the last session of Congress; I therefore do not transmit them. They are on file for use and reference when needed.

#### ACCOUNTS OF MONEY AND PROPERTY.

The accounting branch of the office has been under special charge of the assistant quartermaster general, Brevet Major General Charles Thomas.

The accounts of disbursing officers of this department for money and property, except the returns for clothing, are transmitted monthly from the Third Auditor to this office for administrative examination. The monthly estimate for funds and the record of requisitions for remittances are also kept in this branch of the office. General Thomas reports the number of money accounts settled since the beginning of the war as follows:

Accounts for 1861.....	1, 260
Accounts for 1862.....	4, 054
Accounts for 1863.....	9, 991
Accounts for 1864.....	10, 816
Accounts for 1865.....	2, 533
Accounts for 1866.....	198

Total settled.....	28, 852
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There are on file to be examined, of accounts for the year 1865....	6, 573
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To June 30, 1866.....	8, 489
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The number of money accounts settled in the fiscal year beginning

June 30, 1865, including those settled from June, 1866, to August

31, 1866, is.....	9, 285
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About one thousand three hundred accounts per month can be settled by the force now engaged in this business, with the advantage of experience and training, and it is expected that by the 31st of August, 1867, all the war accounts will have been examined and transmitted to the Third Auditor for final settlement, and that the work of examination of accounts will then be up to date.

## PROPERTY RETURNS.

There have been received at the office, returns of quartermaster's stores, exclusive of returns of clothing and equipage, which go to the second division of the office, since the beginning of the war, 200,005.

Those for the years 1861, 1862, 1863, and most of those for 1864, have been examined and transferred to the treasury for final settlement.

There remain to be examined, of the returns for 1864, 1865, and 1866, 68,905.

The examination of the war returns will be completed, it is expected, by the 31st of August, 1867, at which time the arrears of work in examination of both accounts and returns accumulated during the pressure of business attending the supply of the army during the war will be disposed of.

The examination and settlement of clothing accounts and returns in the second division has already been brought up to date.

I transmit herewith reports of officers in charge of the divisions of this office, and of the officer in charge of the accounting branch, which give full information upon the business of this office.

The balances of appropriations, with the sums derived and to be derived from sales of property, will, it is expected, be sufficient for the regular service of the department to June 30, 1868, and therefore no new appropriations are asked for the service of the next fiscal year.

Should Congress extend the privileges of the law of July 4, 1864, to claims arising in States to which it does not now extend, appropriations to meet these claims may become necessary.

To the chiefs of divisions of this office, and to the officers who at important posts have conducted the affairs of the quartermaster's department, credit is due for the prompt and correct despatch of a vast amount of business.

The movements of troops have been rapid and extensive, the supplies have been abundant and ready when needed, and the accounts of expenditures and returns of property have been rendered with regularity and general correctness.

The establishment and organization which was needed to supply an army of a million of men has been reduced to that needed by the present establishment. Vast quantities of structures erected during the war, and of stores and material provided for the army, and not now needed, have been sold and the proceeds properly accounted for; and the stores and material retained for future use have been collected into permanent depots, or transferred to the new scenes of operation west of the Mississippi.

All of which is respectfully submitted.

M. C. MEIGS,

*Quartermaster General, Brevet Major General U. S. Army.*

Hon. EDWIN M. STANTON,

*Secretary of War.*

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*List of papers accompanying the annual report of the Quartermaster General for 1866.*

No. 1. Financial statement.

*First division—(Supply of public animals.)*

No. 2. Report of Brevet Brigadier General James A. Ekin, (1st division.)

No. 3. Report of Brevet Brigadier General James A. Ekin, (cavalry bureau.)

*Second division—(Clothing and equipage.)*

No. 4. Report of Brevet Brigadier General A. J. Perry, with papers, viz:

Statement of uniform clothing, camp and garrison equipage not issued, in depot June 30, 1866.

Statement of damaged and unserviceable articles sold during fiscal year.

Statement of expense on account of clothing, camp and garrison equipage at principal depots during the fiscal year.

Statement of articles issued to the Bureau of Refugees, Freedmen and Abandoned Lands.

Statement showing the number of returns of accounts of officers examined and sent to the treasury for final settlement.

Statement of claims received.

*Third division—(Ocean and lake transportation.)*

No. 5. Report of Brevet Brigadier General George D. Wise, with papers, viz :

List of vessels owned.

List of vessels chartered.

Statement of property sold.

Statement of captured vessels during the war.

Statement of vessels lost or destroyed during the war.

Statement of claims presented, audited, and rejected.

*Fourth division—(Rail and river transportation.)*

No. 6. Report of Colonel Alexander Bliss, with papers, viz :

Statement showing number of troops and others, and quantities of supplies transported during the fiscal year.

Table of payments made during the year for this transportation.

Statement showing names, lengths, &c., and railroads operated by the United States during the war.

Statement of number of engines and cars purchased, built, and captured, and disposition made of them.

Statement of cost of operating military railroads during the war.

Statement of sales of military railroad property for cash and on credit during the fiscal year.

Statement of indebtedness of the several railroads for railroad material sold to them by the United States.

Statement of cost of materials and labor performed for the construction and maintenance of way on the United States military railroads in the military division of the Mississippi.

Statement showing the steamboats, barges, &c., belonging to the United States at the beginning of the fiscal year, their disposition and proceeds of sale.

Statement of sales of coal belonging to transportation department on the western waters during the fiscal year.

List of boats destroyed on the Mississippi river and its tributaries from May, 1861, to the surrender of General Kirby Smith and cessation of hostilities.

List of vessels chartered, impressed, and employed during the fiscal year.

Statement exhibiting in detail the number and character of claims received in the fourth division in the fiscal year, and action taken thereon.

No. 7. Report of Brigadier General D. C. McCallum, director and chief manager of military railroads of the United States during the war.

No. 8. Report of Colonel Anson Stager, United States military telegraphs.

*Fifth division—(Regular supplies quartermaster's department.)*

No. 9. Report of Brevet Brigadier General S. L. Brown.

*Sixth division—(Barracks and quarters and cemeteries.)*

No. 10. Report of Brevet Brigadier General J. J. Dana, with papers, viz :

Report in relation to cemeteries during the fiscal year.

Schedule of actual, or contracted, or estimated cost of the various items connected with the disinterment and remains of deceased soldiers in various sections of the United States.

Circular to chief quartermasters on the subject of burial of soldiers throughout the United States.

List of national cemeteries in the neighborhood of Washington and in Virginia under the charge of Lieutenant Colonel James M. Moore, A. Q. M.

Extract from report of Captain E. B. Whitman on cemeteries of Middle Tennessee, September 1, 1865.

*Seventh division and ninth division—(Military trains and incidental allowances, records and correspondence.)*

No. 11. Report of Brevet Brigadier General B. C. Card, with papers, viz :

Statement of number and amount of claims received, paid, and remaining on hand in seventh division during the fiscal year.

The same, from July 1 to September 30, 1866.

No. 12. Statement, with tables, of number of wagons, ambulances, carts, harness, &c., purchased, fabricated, captured, sold, and expended during the fiscal year, as far as shown by reports of officers in the office on the 8th instant.

*Eighth division—( Inspection. )*

- No. 13. Reports of Brevet Brigadier General G. V. Rutherford, with papers, viz :
- List of principal depots, with names of officers in charge during the fiscal year.
  - List of inspectors of the quartermaster's department during the fiscal year.
  - List of officers who have served as chief quartermasters of armies.
  - List of officers in charge of divisions in the Quartermaster General's office.
  - List of officers who have served as senior and supervising quartermasters of military divisions.
  - List of officers who have served as chief quartermasters of corps.
  - List of officers who have served as chief quartermasters of divisions.
  - List of officers of the quartermaster's department who have been promoted by brevet.

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**No. 1.—FINANCIAL STATEMENT.**

On the 30th of June, 1865, the termination of the preceding fiscal year, the unsettled balances charged against disbursing officers (after deducting the disbursements ascertained from accounts which had passed the required administrative examination of this office) amounted, as stated in the last annual report, to .....			\$506, 176, 562 44
From which there is to be made a deduction of the amount of disbursements, as ascertained from accounts for periods prior to and for the fiscal year ending June 30, 1865, which had been received and registered, but of which the required administrative examination had not been made, viz :			
Prior to the fiscal year .....	\$82, 446, 154 51		
During the fiscal year .....	375, 932, 744 71		
		\$458, 378, 899 22	
Less amount shown to have been received from sales of property, rent of buildings, &c.....		12, 005, 976 93	
			446, 372, 922 29
Leaving an outstanding balance June 30, 1865, charged to disbursing officers of.....			59, 803, 640 15
Which was made up as follows, viz :			
1st. Amount of requisitions drawn during the fiscal year 1865, the accounts for disbursement of which had not been received at this office.....		\$8, 528, 557 99	
A large portion of this, although remitted during the fiscal year, could not have been received before its termination, and could not, therefore, be accounted for during that fiscal year; the greater portion had doubtless been accounted for direct to the proper accounting officer of the Treasury Department, as required by the act of Congress approved July 17, 1862.			
2d. Amount in the hands of officers to be accounted for hereafter .....		51, 275, 082 16	
			59, 803, 640 15
Of this latter amount the sum of one million eight hundred sixty-two thousand one hundred and ninety-one dollars and eighty-seven cents (\$1,862,191 87) was amount of requisitions drawn during the fiscal years 1862, 1863, and 1864, in favor of officers, not taken up in their accounts received at this office, viz :			
In the fiscal year 1862.....	\$996, 287 87		
In the fiscal year 1863.....	417, 988 00		
In the fiscal year 1864.....	447, 916 00		
		1, 862, 191 87	
The sum of forty-nine million four hundred and twelve thousand eight hundred and ninety dollars and twenty-nine cents (\$49,412,890 29) was amount in hands of officers unaccounted for (as ascertained from balances found due the government upon examination of the last accounts received and from receipts for advances made to officers for disbursement during the fiscal years 1864 and 1865) by officers whose accounts had been rendered.....			49, 412, 890 29

Amount brought forward..... \$51,275,082 16

Of this amount the sum of forty-four million six hundred and twenty thousand five hundred and twelve dollars and three cents (\$44,620,512 03) was the amount of balances found due the government upon examination of the last accounts received in the fiscal year 1865, \$44,620,512 03.

The balance, four million seven hundred and ninety-two thousand three hundred and seventy-eight dollars and twenty-six cents (\$4,792,378 26) was the amount of the receipts for advances made to officers for disbursement during the fiscal years 1864 and 1865, not taken up in the accounts received at this office, as before stated, \$4,792,378 26.

The greater portion of this had probably been accounted for direct to the proper accounting officers of the Treasury Department, as required by the act of Congress before referred to.

Total amount as above ..... 51,275,082 16

Balance for which the accounts had not received the required administrative examination of this office, as above reported ..... \$506,176,562 44

To which are to be added—

1st. Remittances in July, 1865.....	\$2,148,440 00	
Remittances in August, 1865.....	11,646,562 00	
Remittances in September, 1865...	883,039 42	
Remittances in October, 1865.....	22,480,033 27	
Remittances in November, 1865...	5,942,814 61	
Remittances in December, 1865...	4,829,431 00	
Remittances in January, 1865.....	1,414,000 00	
Remittances in February, 1866....	1,186,900 00	
Remittances in March, 1866.....	942,483 21	
Remittances in April, 1866.....	1,165,311 96	
Remittances in May, 1866.....	815,103 00	
Remittances in June, 1866.....	377,675 80	
		53,831,794 27
2d. Proceeds of sales of property, rents, buildings, &c..		11,755,841 16
		571,764,197 87

Total to be accounted for.....

From which are to be deducted the disbursements and the amount returned to the treasury by officers, as ascertained from accounts which have passed the required administrative examination of this office, viz:

Disbursements prior to the fiscal year (the accounts for which had not passed the required administrative examination in time for the last annual report)..... \$220,257,441 85

In the month of July, 1865.....	6,336,073 81
In the month of August, 1865.....	4,172,104 53
In the month of September, 1865.....	2,973,526 17
In the month of October, 1865.....	4,080,638 61
In the month of November, 1865.....	1,245,152 85
In the month of December, 1865.....	1,586,022 85
In the month of January, 1866.....	941,246 07
In the month of February, 1866.....	186,873 18
In the month of March, 1866.....	216,571 41
In the month of April, 1866.....	58,914 09
In the month of May, 1866.....	69,391 56
In the month of June, 1866.....	11,695 77

242,135,652 75

Amount returned to the treasury .....

1,972,357 11

244,108,009 86

Balance due June 30, 1866 .....

327,656,188 01

From which there is to be made a further deduction of the amount of disbursements and the amount returned to the treasury, as ascertained from accounts for periods prior to and in the fiscal year ending June 30,

Amount brought forward.....	\$327,656,188 01	
1866, which have been received and registered, but of which the required administrative examination has not been made, viz:		
Amount prior to the fiscal year 1866....	\$237,674,543 91	
Amount in the fiscal year 1866.....	106,299,321 80	
Total.....	343,973,865 71	
Less amount shown to have been received from sales of property, rent of buildings, &c.....	25,864,210 53	
	<u>318,109,655 18</u>	
Leaving a balance June 30, 1866, charged to disbursing officers, of.....		\$9,546,532
Which is made up as follows, viz:		
1st. Amount of requisitions drawn in favor of officers and not taken up in their accounts received at this office, viz:		
In the fiscal year 1862.....	\$949,682 60	
In the fiscal year 1863.....	7,055 00	
In the fiscal year 1864.....	150,966 00	
In the fiscal year 1865.....	54,585 00	
In the fiscal year 1866.....	920,607 93	
	<u>2,082,896 53</u>	
2d. Amount of advances made to officers for disbursements not taken up, as ascertained from the accounts received at this office, viz:		
In the fiscal year 1864.....	\$346,786 74	
In the fiscal year 1865.....	209,887 50	
In the fiscal year 1866.....	1,379,839 84	
Total.....	<u>1,936,514 08</u>	
3d. Amount in the hands of officers and agents accounted for as balances due the government, ascertained upon examination of their last accounts received.....	5,527,122 22	
	<u>9,546,532 83</u>	
The amounts of accounts which, during the fiscal year ending the 30th of June, 1866, passed the administrative examination of this office, and were transmitted to the treasury for final settlement, were, viz:		
1st. For regular supplies, viz:		
Fuel .....	\$3,280,076 08	
Forage .....	36,361,498 31	
Straw .....	149,956 66	
Stationery .....	1,283,337 88	
	<u>41,074,868 93</u>	
2d. For incidental expenses of the army, viz:		
Postage .....	285,758 14	
Expenses of courts-martial.....	322,025 86	
Express and escorts.....	33,748 49	
Burial expenses .....	203,856 63	
Guides, interpreters, and spies.....	241,298 92	
Clerks and agents.....	3,693,244 90	
Pay of wagon and forage masters...	4,881 27	
Laborers.....	7,674,835 57	
Soldiers on constant labor.....	256,234 26	
Hire of veterinary surgeons.....	58,287 32	
Office furniture .....	132,048 15	
Medicines for horses and other animals.....	151,794 01	
Forges, blacksmiths' and shoeing tools .....	141,043 00	
Horse and mule shoes, nails, iron, and steel for shoeing .....	1,075,117 50	
Picket rope .....	1,035 13	
Apprehension of deserters .....	493,305 90	
	<u>14,768,615 02</u>	



Amount brought forward .....	\$55,843,183 95	
3d. Cavalry and artillery horses .....	27,095,509 00	
4th. Transportation and supply of prisoners, &c. ....	290,425 60	
5th. Telegraph for military purposes and expenses in operating the same .....	952,246 29	
6th. Barracks and quarters, viz:		
For rent .....	\$2,241,475 61	
For repairs and construction .....	9,221,689 31	
		11,463,164 92
7th. Mileage—transportation of officers and baggage...		397,605 34
8th. Transportation, viz:		
Of clothing .....	257,693 07	
Of subsistence .....	2,257,444 84	
Of ordnance .....	355,577 96	
Of troops and supplies .....	85,526,466 60	
		88,397,182 47
9th. Purchase of stoves .....		285,669 58
10th. For material for and amount expended in the pur- chase and preparation of clothing, camp and gar- rison equipage .....		56,988,086 25
11th. Collecting, drilling, and organizing volunteers ...		27,195 31
12th. For the construction and maintenance of the gun- boat fleet proper .....		75,320 51
13th. For the purchase, construction, and maintenance of steam rams .....		25,682 26
14th. Special expenditures for other departments and under special appropriations, viz:		
For medical department .....	\$40,111 71	
For ordnance department .....	5,886 81	
For pay department .....	1,223 00	
For subsistence department .....	16,242 58	
For engineer department .....	7,284 42	
For Adjutant General's department .....	265 00	
For army contingencies .....	221,035 60	
For Provost Marshal General's de- partment .....	6,864 68	
For signal service .....	765 78	
For Navy Department .....	12,082 96	
		311,762 54
For secret service .....		14,300 98
		\$242,167,635 00
Less amount of errors, &c., ascertained in officers' accounts .....		31,982 25
Total .....		<u>242,135,652 75</u>

From the above statement it will be seen that during the past year accounts to the amount of \$242,135,652 75 have passed the official examination of this office prior to transmission to the treasury for final examination and settlement. They number 9,285; and 6,523 accounts remain in this office to be examined, relating to disbursements, amounting to \$343,973,865 71.

During the year preceding the last annual report from this office the accounts examined and transmitted to the treasury covered disbursements to the amount of \$226,119,362 24.

No. 2.

#### FIRST DIVISION—SUPPLY OF PUBLIC ANIMALS.

QUARTERMASTER GENERAL'S OFFICE,

*Washington, D. C., September 27, 1866.*

GENERAL: In obedience to General Orders No. 49, Quartermaster General's office, current series, I have the honor to submit the following report of the operations of this division for the fiscal year ending June 30, 1866:

My report of the operations of this division for the fiscal year ending June 30, 1865, and including general statements of official business up to the date of

its transmission, was forwarded to the Quartermaster General on the 17th of October, 1865.

Under the orders specified in my last annual report, I continued during the past fiscal year to perform in this city the duties of chief quartermaster of the cavalry bureau, and also those pertaining to the office of colonel and brevet brigadier general in charge of the first division of the Quartermaster General's office.

My duties under the above assignments related to the purchase, procurement, and disposition of horses and mules required for cavalry, artillery, wagon, and ambulance trains, and for all other purposes for which horses or mules were needed by the armies of the United States; and also to the general supervision of the several cavalry depots which it was deemed necessary to continue in operation for the proper care and advantageous disposal of the large number of public animals that remained on hand for several months after the cessation of active hostilities. The principal depots thus for a time continued were those at St. Louis, Missouri; Nashville, Tennessee; Gisboro', District of Columbia; Harrisburg, Pennsylvania, and Wilmington, Delaware.

The statements called for by paragraphs 3, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 15 of General Orders No. 49, Quartermaster General's office, current series, do not pertain to the business of this division.

Annexed is a statement of quartermaster's property (marked A) for the fiscal year ending June 30. 1866.

Articles.	On hand July 1, 1865.	Received from officers during the year ending June 30, 1866.	Purchased during the year ending June 30, 1866.	Manufactured during the year ending June 30, 1866.	Captured, &c. during the year ending June 30, 1866.	Total.	Issued & transferred.	Expended, lost, &c.	Total.	On hand June 30, 1866.
Books, blank.....	1	.....	.....	.....	.....	1	.....	1	1	.....
Books, blank, 6-quire.....	2	.....	.....	.....	4	6	.....	6	6	.....
Books, cash.....	1	.....	.....	.....	.....	1	.....	1	1	.....
Books, estimate.....	1	.....	.....	.....	.....	1	.....	1	1	.....
Books, letter.....	6	.....	4	.....	.....	10	.....	10	10	.....
Books, military laws.....	1	.....	.....	.....	.....	1	.....	.....	.....	1
Brushes, letter-press.....	1	.....	.....	.....	.....	1	.....	.....	.....	1
Buckets, water.....	2	.....	.....	.....	.....	2	.....	.....	.....	2
Cards, blank.....	3,000	.....	1,000	.....	.....	4,000	.....	4,000	4,000	.....
Chairs, office.....	34	.....	.....	.....	.....	34	.....	.....	.....	34
Chests, stationery.....	2	.....	.....	.....	.....	2	.....	.....	.....	2
Cocoa matting, yards.....	238	.....	.....	.....	.....	238	.....	.....	.....	238
Copying-presses.....	2	.....	.....	.....	.....	2	.....	.....	.....	2
Desks, office.....	14	.....	.....	.....	.....	14	.....	.....	.....	14
Elbows.....	6	.....	.....	.....	.....	6	.....	.....	.....	6
Envelopes.....	.....	.....	1,500	.....	.....	1,500	.....	1,500	1,500	.....
Erasers.....	5	.....	.....	.....	.....	5	.....	.....	.....	5
Inkstands.....	16	.....	.....	.....	.....	16	.....	.....	.....	16
Paper, blotting, sheets.....	.....	.....	.....	.....	2	2	.....	2	2	.....
Paper-cutters.....	1	.....	.....	.....	.....	1	.....	.....	.....	1
Paper-folders.....	1	.....	.....	.....	.....	1	.....	.....	.....	1
Paper, note, quires.....	.....	.....	60	.....	.....	60	.....	60	60	.....
Receipts, sale.....	10,000	.....	5,000	.....	.....	15,000	.....	15,000	15,000	.....
Rulers.....	6	.....	.....	.....	.....	6	.....	.....	.....	6
Safes, iron.....	2	.....	.....	.....	.....	2	.....	.....	.....	2
Scales, post office.....	1	.....	.....	.....	.....	1	.....	.....	.....	1
Scuttles, coal.....	2	.....	.....	.....	.....	2	.....	.....	.....	2
Shears, office.....	1	.....	.....	.....	.....	1	.....	.....	.....	1
Stove-pipe, pieces.....	9	.....	.....	.....	.....	9	.....	.....	.....	9
Stoves, office.....	3	.....	.....	.....	.....	3	.....	.....	.....	3
Tables, office.....	5	.....	.....	.....	.....	5	.....	.....	.....	5

The following is a statement of public moneys received, disbursed, and transferred by me during the fiscal year ending June 30, 1866:

On hand July 1, 1865.....	\$486, 044 99
Received from officers during the year.....	409, 657 74
Received from Treasury Department during the year.....	
Received from sale of dead horses during the year.....	11, 549 32
	<hr/>
	907, 252 05
	<hr/>
Expended during the year.....	\$176, 348 72
Transferred to other officers during the year.....	730, 903 33
Remaining on hand June 30, 1866.....	
	<hr/>
	907, 252 05
	<hr/>

By order of the Quartermaster General, dated November 22, 1865, relieving chiefs of divisions from all responsibility as disbursing officers, with a view to enable them to confine their attention, so far as relates to accounts, to examining and acting upon the disbursements of their subordinates, all public moneys in my possession were turned over to Colonel J. C. McFerran, disbursing officer quartermaster's department in this city.

During my entire service of upwards of four years as a disbursing officer of the quartermaster's department, I have disbursed and properly accounted for the sum of twenty-seven million five hundred and six thousand two hundred and forty dollars and eighty-one cents, (\$27,506,240 81.)

Under General Orders No. 24, Quartermaster General's office, April 29, 1865, to reduce, as far as possible, the expenses of the quartermaster's department, the several cavalry depots were abandoned as rapidly as the necessities of the service would permit, and all the public property connected therewith was properly disposed of, in accordance with existing regulations.

Of the depot at Gisboro', D. C., which, as a post for receiving, recuperating, and issuing public animals, proved of great advantage to the service, a separate report, detailing its operations, is in course of preparation, and will be forwarded in a few days.

Within the past fiscal year there were no purchases of animals, except in the military division of the Pacific, (department of California,) in which contracts were made, so far as reported to this division, for the delivery to the quartermaster's department there of one hundred and fifty-six (156) cavalry horses, one hundred and forty-six (146) artillery horses, and seven hundred and fifty (750) mules, at an average price of ninety-five dollars and fifty-eight cents (\$95 58) for cavalry horses, two hundred and twenty-seven dollars and ninety-four cents (\$227 94) for artillery horses, and one hundred and fifty-four dollars and sixty-five cents (\$154 65) for mules, payable in gold coin, or in its equivalent in currency. These animals were required to meet the wants of the service in that department, and the purchases there were deemed expedient on account of its remoteness from the supply depots in the Atlantic States, and the consequent heavy cost of transportation.

My last annual report shows that there were on hand June 30, 1865, at the several depots therein named, fourteen thousand nine hundred and seventeen (14,917) cavalry horses, three thousand four hundred and seventy-five (3,475) artillery horses, and thirty-six thousand one hundred and sixty-nine (36,169) mules. Of these animals, as many of the best as the service required were retained for use at military posts and for issue, and the remainder were sold at public auction under existing orders and regulations for the disposition of surplus and unserviceable animals.

In addition to these, and in pursuance of General Orders No. 28, Quartermaster General's office, series 1865, large numbers of public animals, both serviceable and unserviceable, turned in from the disbanding armies, were sold at public auction during the past fiscal year. The prices realized from these sales were generally very good, and in some instances remarkably high. Preparatory to sale, it was deemed advisable to retain in depot the more unserviceable animals for recuperation, while the better stock was distributed throughout the country for sale at such points as promised to afford the best markets. Results have shown that the expense of keeping the animals for a brief season, for the purpose of recuperation, was more than counterbalanced by the increased prices which they brought at public sale in consequence of their improved condition.

In conducting these sales, employes of the quartermaster's department were, as required by General Orders No. 42, Quartermaster General's office, series 1865, engaged as auctioneers; and experience has demonstrated that the prices realized under this system, as compared with those received through the agency of professional auctioneers, were much greater, while the expenses of sales were considerably less. The auction sales of government mules at St. Louis, Missouri, since November, 1865, fully illustrate the advantage of conducting sales in the manner prescribed by General Orders No. 42, above referred to. A comparison of sales made at that place, since the date mentioned, shows that the average price received for mules sold by a professional auctioneer was one hundred and five dollars and twenty-five cents (\$105 25) each, while the average price received through the agency of an employe of the quartermaster's department was one hundred and thirty dollars and forty-five cents (\$130 45) per head.

The following statement of sales of public animals from the 1st of May, 1865, to the 2d of August, 1866, shows that, including the number of animals sold, and the proceeds therefrom, as mentioned in my last annual report, there were disposed of at public auction, within the dates above stated, one hundred and four thousand four hundred and seventy-four (104,474) horses for five million six hundred and thirty thousand four hundred and seventeen dollars and thirty-nine cents, (\$5,630,417 39,) and one hundred and two thousand nine hundred and fifty-four (102,954) mules for seven million six hundred and eighty-five thousand two hundred and twenty-five dollars and ninety-six cents, (\$7,685,225 96.) For horses, mules, and oxen sold within the same period, and number not reported, there were received one million nine hundred and fifty-three thousand four hundred and thirty-two dollars and nineteen cents, (\$1,953,432 19.) The total proceeds of these sales were fifteen million two hundred and sixty-nine thousand seventy-five dollars and fifty-four cents, (\$15,269,075 54)

Statement of sales of public animals made under direction of various officers since May 1, 1865, as reported to the first division Quartermaster General's office.

REPORT OF THE SECRETARY OF WAR.

Station.	Names	Horses.	Amount.	Mules.	- Amount.	Horses and mules. No. not reported.	Amount.
Albany, N. Y.....	Captain G. H. Weeks.....	7	\$329 50	.....	.....	.....	.....
Do.....	Captain J. E. Jones.....	.....	.....	490	\$40,098 00	.....	.....
Alexandria, La.....	Lieutenant Silas Baltzell.....	112	5,087 00	142	13,653 00	.....	.....
Alexandria, Va.....	Captain J. G. C. Lee.....	78	3,789 50	.....	.....	.....	.....
Anderson, S. C.....	Lieutenant James M. Story.....	22	774 50	3	164 00	.....	.....
Annapolis, Md.....	Lieutenant John Power.....	85	7,818 40	25	3,922 50	.....	\$4,056 00
Do.....	Lieutenant G. S. Blodgett.....	48	4,058 13	40	4,167 25	.....	.....
Athens, Tenn.....	Lieutenant S. F. True.....	94	2,675 00	149	4,272 00	.....	.....
Athens, Ga.....	Lieutenant Ira B. Dutton.....	30	1,803 00	.....	.....	.....	.....
Atlanta, Ga.....	Lieutenant Otto Botticher.....	499	12,719 50	29	1,099 00	.....	.....
Do.....	Captain R. T. Coverdale.....	.....	.....	.....	.....	.....	4,179 00
Do.....	Lieutenant James M. Ingalls.....	.....	.....	.....	.....	.....	1,540 00
Augusta, Ga.....	Captain J. C. Clements.....	526	20,182 50	282	17,878 50	.....	.....
Do.....	Colonel C. K. Smith.....	660	26,067 00	196	16,293 00	.....	6,441 00
Do.....	Lieutenant B. S. Fisher.....	.....	.....	.....	.....	.....	19,238 50
Augusta, Maine.....	Captain T. G. Whytal.....	15	1,490 00	.....	.....	.....	.....
Austin, Texas.....	Lieutenant G. W. Spangler.....	116	3,347 00	414	26,691 00	.....	2,120 00
Apalachicola, Fla.....	Lieutenant J. E. Young.....	2	185 00	8	917 50	.....	.....
Barrancas, Fla.....	Captain C. H. Dickinson.....	33	2,036 00	90	8,534 50	.....	.....
Baltimore, Md.....	Captain G. T. Browning.....	1,421	80,817 00	.....	.....	.....	.....
Do.....	Captain C. B. Beach.....	956	72,460 30	184	22,765 00	.....	.....
Do.....	Captain Campbell Hay.....	.....	.....	294	22,820 00	.....	.....
Do.....	Colonel G. W. Bradley.....	35	4,190 00	45	7,205 00	.....	5,390 00
Do.....	Captain A. M. Cummings.....	.....	.....	.....	.....	.....	4,663 50
Baton Rouge, La.....	Captain J. J. McDermid.....	12	561 00	183	24,929 00	.....	.....
Boston, Mass.....	Captain John W. McKim.....	31	3,187 50	.....	.....	.....	.....
Bowling Green, Ky.....	Captain R. A. McCann.....	152	5,152 00	.....	.....	.....	.....
Do.....	Captain R. A. McCormick.....	424	19,634 00	254	17,586 00	.....	.....
Brattleboro', Vt.....	Captain F. O. Sawyer.....	61	6,973 00	.....	.....	.....	774 50
Brownsville, Texas.....	Colonel Nelson Plato.....	.....	.....	.....	.....	.....	49,927 00
Buffalo, N. Y.....	Captain E. C. Wilson.....	20	1,655 00	.....	.....	.....	.....



Burksville, Va.....	Captain C. W. Folsom.....	36	2, 149 50	10	942 00	.....	.....
Calro, Ill.....	Major A. C. Wofolk.....	41	5, 556 00	.....	.....	.....	.....
Camden, Ark.....	Captain Samuel Baird.....	.....	.....	.....	.....	.....	14, 352 00
Camp Douglas, N. T.....	Captain E. B. Grimes.....	262	13, 496 00	.....	.....	.....	.....
Camp Nelson, Ky.....	Captain E. W. Restieux.....	427	19, 329 00	617	55, 220 00	11 oxen	745 00
Do.....	Colonel R. N. Batchelder.....	.....	.....	.....	.....	.....	420 00
Do.....	Captain E. D. Baker.....	103	3, 763 00	.....	.....	.....	19, 212 70
Charlestown, W. Va.....	Captain J. E. Fleming.....	554	24, 784 00	124	9, 298 00	.....	.....
Charleston, S. C.....	Captain Wm. Holden.....	62	4, 574 70	22	1, 427 89	.....	.....
Charlotte, N. C.....	Captain D. W. H. Day.....	1, 071	41, 016 00	1, 366	92, 195 00	.....	480 00
Chattanooga, Tenn.....	Captain E. Hade.....	474	11, 900 08	587	21, 830 62	.....	38, 330 75
Do.....	Captain Chs. H. Deane.....	5	405 00	.....	.....	.....	.....
Do.....	Captain James T. Clarke.....	.....	.....	.....	.....	.....	180 00
Do.....	Captain J. E. Remington.....	510	23, 374 28	505	32, 657 22	.....	.....
Do.....	Major Thomas J. Carlisle.....	21	1, 455 45	121	11, 650 06	.....	23, 856 00
Do.....	Captain W. A. Wainright.....	.....	.....	.....	.....	.....	9, 579 30
Chicago, Ill.....	Captain Charles Goodwin.....	35	3, 226 50	22	2, 705 00	.....	.....
Do.....	Captain L. H. Pierce.....	181	13, 147 50	610	61, 932 50	.....	2, 055 00
Cincinnati, Ohio.....	Captain D. W. McClung.....	401	34, 735 00	479	32, 483 00	.....	.....
Do.....	Captain C. E. Bliven.....	1, 823	106, 785 00	31	1, 585 00	.....	.....
Clarksburg, W. Va.....	Captain A. Fisher.....	1, 968	61, 893 00	460	28, 706 82	oxen	199 00
Cleveland, Ohio.....	Captain C. Hay.....	199	15, 445 00	1, 415	112, 911 00	.....	.....
Do.....	Captain G. B. Cadwallader.....	20	2, 063 00	.....	.....	.....	.....
Clinton, Tenn.....	Lieutenant S. F. True.....	92	2, 798 00	45	1, 307 00	.....	.....
Columbus, Ohio.....	Captain Fielding Lowry.....	.....	.....	.....	.....	.....	5, 581 25
Columbus, Ky.....	Captain H. W. Persing.....	.....	.....	.....	.....	.....	8, 500 50
Columbus, Miss.....	Captain G. L. Heaton.....	.....	.....	.....	.....	.....	9, 188 00
Concord, Tenn.....	Lieutenant S. F. True.....	71	2, 359 00	30	911 00	.....	.....
Corpus Christi, Texas.....	Captain S. Harned.....	.....	.....	.....	.....	.....	705 00
Covington, Ky.....	Captain G. P. Webster.....	1, 059	42, 630 00	584	35, 950 00	.....	.....
Cumberland, Md.....	Captain G. W. Harrison.....	396	24, 838 36	287	21, 692 86	.....	74, 825 00
Cumberland Gap, Ky.....	Lieutenant A. McMillan.....	237	8, 484 00	69	3, 191 00	.....	848 00
Danville, Ky.....	Captain E. B. Restieux.....	471	18, 887 10	572	31, 208 32	.....	.....
Davenport, Iowa.....	Captain E. S. Corning.....	24	2, 518 00	.....	.....	.....	.....
Decatur, Ala.....	Lieutenant Ira B. Dutton.....	131	6, 874 50	.....	.....	.....	.....
Do.....	Lieutenant J. W. Sidwell.....	7	577 00	53	3, 958 00	.....	.....
Denver, C. T.....	Captain P. T. Turnley.....	.....	.....	.....	.....	oxen	336 00
Do.....	Captain John B. Howard.....	.....	.....	.....	.....	.....	25, 868 50
Detroit, Mich.....	Colonel G. W. Lee.....	28	4, 028 00	.....	.....	.....	11, 444 00
Duval's Bluff, Ark.....	Captain David McKinney.....	36	1, 351 00	92	8, 294 00	.....	6, 389 50

## Statement of sales of public animals, &amp;c.—Continued.

Station.	Names.	Horses.	Amount.	Mules.	Amount.	Horses and mules. No. not reported.	Amount.
Duval's Bluff, Ark.	Captain G. H. Pratt					oxen	\$100 00
Do.	do.						5,066 00
Do.	Colonel Henry Page						3,900 00
Edenton, N. C.	Captain C. M. Merritt	14	\$495 00	17	\$761 50		
Edgefield, Tenn.	Captain H. M. Smith	7,228	339,427 20	149	5,261 80		
Elmira, N. Y.	Captain J. J. Elwell	338	31,839 24				
Do.	Captain G. T. Browning	200	14,600 00	482	42,191 00		
Do.	Captain Milton Dana						5,308 00
Erie, Pa.	Captain E. C. Wilson	200	14,676 50				
Evansville, Ind.	Captain G. W. Cushing	16	2,133 00	2	525 00		
Fayetteville, N. C.	Captain A. M. Garoutte	51	2,755 00	154	8,503 00		
Fort Abercrombie, N. T.	Captain J. E. McKinsick	24	2,813 31				
Fort Kearney, N. T.	Captain George P. Ladd	184	7,493 50	104	6,803 00		2,704
Fort Leavenworth, Kansas	Captain P. Flanigan	3,866	157,244 00	6,232	388,563 50		
Do.	Colonel J. A. Potter	850	52,895 00	14	1,207 00		
Fort Monroe, Va.	Colonel A. P. Blunt					5 oxen	328 00
Do.	do.	480	34,182 50	270	22,402 50		67,980 50
Do.	Colonel A. S. Flagg	10	376 50			oxen	180 00
Fort McPherson, N. T.	Major W. H. Daniels	73	3,726 65	81	6,045 84		97 73
Fort Riley, Kansas	Captain D. W. Scott					oxen	300 00
Do.	do.	127	3,802 00	7	288 00		13,670 15
Do.	Captain R. B. Owen	13	783 00	11	588 00		
Fort Porter, N. Y.	Captain H. A. Dupuy	2	248 00				
Fort Scott, Texas	Captain Theo. Bowles						11,932 00
Fort Smith, Ark.	Captain J. O. Churchill					oxen	209 00
Do.	do.						19,828 00
Fort Snelling, Minn.	Captain C. W. Nash	2	255 00				
Fort Union, N. M.	Captain H. J. Farnsworth						3,882 50
Fort Wright, Cal.	Captain C. D. Douglass						190 00
Franklin, Mo.	Captain H. Garvens	39	1,786 50	1	6 00		
Franklin, Tenn.	Captain L. Grundy	55	2,347 95	25	1,407 00		
Frederick, Md.	Captain John P. Rutherford						32,397 00

Fredericksburg, Va	Captain Lambert				100	3,925 00			
Gainesville, Ala.	Captain C. H. Deane								830 00
Gallatin Tenn	Captain C. H. Reynolds								5,494 00
Gallipolis, Ohio	Captain L. C. Forsyth	293	16,393 00		9	1,129 00			24,675 00
Galveston, Texas	Major E. B. Fart	49	3,621 00		104	5,067 50			
Gisboro', D. C	Captain G. T. Browning	14,172	597,908 61						
Goldsboro', N. C	Captain G. F. Willy	35	2,336 00		192	12,332 50			
Grenada, Miss	Captain G. L. Heaton								
Greensboro', N. C	Captain D. W. H. Day	458	20,489 00		775	51,954 00			11,632 00
Greenville, Tenn	Captain George W. Marshall								
Harrisburg, Penn	Captain E. C. Reichenbach	1,537	143,890 00		4,803	504,396 25			18,614 35
Harper's Ferry, Va	Captain George A. Flagg	783	48,069 32		608	49,183 84			16,500 00
Helena, Ark	Captain Henry Sweeny								67,400 50
Do	Lieutenant F. M. Trober								8,481 00
Hempstead, Texas	Captain C. A. Garcelon	30	577 00		42	1,341 50			5,146 50
Hicksford, Va	Captain C. W. Folsom	12	465 00		8	479 50			
Hilton Head, S. C	Captain W. E. Morford	35	1,967 00						
Do	Captain Charles Barnard	50	6,950 00						
Houston, Texas	Captain C. A. Garcelon	293	7,012 00		206	7,081 00			557 00
Do	Captain A. A. Sampson	10	544 00		71	4,404 00			
Do	Lieutenant C. A. Dempsey								
Huntsville, Ala	Lieutenant A. M. Anderson								2,307 00
Do	Captain C. A. Reynolds								7,107 00
Do	Captain H. B. Whitsel	155	8,844 96		292	24,272 83			1,837 00
Indianola, Texas	Captain E. J. Smith	1	23 00		11	701 25			
Indianapolis, Indiana	Captain Campbell Hay	134	5,829 25						
Do	Captain James Wilson	994	50,592 45		946	53,730 70			17,529 90
Do	Captain L. Cass Forsyth	443	29,346 00		227	19,395 00			
Jackson, Miss	Captain G. L. Heaton								
Do	Major H. W. Johnson								33,409 00
Jacksonville, Florida	Captain J. K. Russell	58	2,675 00						15,085 00
Do	Lieutenant William Hogan	60	5,530 00		44	3,512 00			
Jeffersonville, Indiana	Captain J. H. Belcher	47	4,943 00		16	2,225 00			
Johnson's Island, Ohio	Captain J. J. McClelland				10	1,227 00			
Do	Captain G. W. Cushing				41	5,235 00			
Kansas City	Captain T. C. McCall								205 00
Key West, Fla	Lieutenant Charles Simon	14	1,702 00						1,879 00
Kinston, N. C	Lieutenant S. F. True	2	115 50		2	355 00			
Do	Captain W. H. Wheeler	110	4,253 00		48	1,634 00			
Knoxville, Tenn	Lieutenant S. F. True	49	2,659 50		81	7,429 00			
Do	Captain W. A. Wainwright	250	5,368 85		124	2,974 00			
		174	7,458 50		280	24,002 00			30,073 00

## Statement of sales of public animals, &amp;c.—Continued.

Station.	Names.	Horses.	Amount.	Mules.	Amount.	Horses and mules. No. not reported.	Amount.
Knoxville, Tenn.	Captain W. J. Colburn	533	\$18,995 00	76	\$3,642 00		\$16,456 00
Lebanon, Ky.	Lieutenant J. W. Forney	72	3,451 00	28	2,710 00		
Lenoirs, Tenn.	Lieutenant S. F. True	38	745 00	37	946 75		
Lexington, Ky.	Captain Thomas D. Fitch	1,207	47,139 50	924	50,628 00		115,738 00
Do.	Captain John B. Campbell	526	19,545 00	204	22,627 00		44,343 00
Lexington, N. C.	Captain D. W. H. Day	984	8,162 75	140	5,765 00		
Do.	Captain W. H. Wheeler	82	3,857 00	120	5,833 00		
Department of Arkansas.	Colonel C. A. Henry			627	25,839 76		
Do.	Colonel H. T. Noble					oxen	91 50
Do.	do.	80	4,361 50	296	25,120 00		396,497 76
London, Tenn.	Lieutenant S. F. True	175	5,945 00	169	5,639 00		
Louisburg, N. C.	Captain A. M. Garoutte	53	1,825 00	54	2,128 00		
Louisville, Ky.	Captain J. H. Belcher	1,508	99,623 10	824	52,677 12		25,975 50
Do.	Captain E. B. Restieaux						1,088 00
Lynchburg, Va.	Captain M. H. Alberger	689	23,995 00	309	21,409 00		2,009 00
Macon, Ga.	Captain W. A. Rankin	1,585	33,175 66	307	12,559 50		
Do.	Major H. W. Johnson	2	250 00	19	4,090 00		
Madison, Wis.	Captain John H. Brown	14	1,880 00	2	300 00		330 00
Madison Barracks, N. Y.	Captain George P. Ladd	34	2,647 00				
Marietta, Ga.	Colonel R. T. Coverdale						391 00
Manchester, N. H.	Captain John W. McKim	2	300 00				
Marysville, Tenn.	Lieutenant S. F. True	103	3,057 00	55	1,444 00		
Memphis, Tenn.	Colonel R. E. Clary	2,054	141,960 88	1,143	132,313 51		34,856 00
Do.	Lieutenant John A. Wright	132	9,419 00	189	14,663 00		29,262 50
Do.	Captain John C. Grierson	578	23,331 00				
Milwaukie, Wis.	Captain J. N. Mason	2	190 00				765 00
Mobile, Ala.	Captain E. B. Boyd	205	18,656 00	435	47,639 50		17,705 50
Do.	Captain John Stewart	521	29,901 50	1,263	101,167 50		
Monticello, Fla.	Captain John J. McClelland	26	3,915 00	4	780 00		
Montgomery, Ala.	Captain Richard Penny	229	11,083 00	926	92,183 00		59,498 00
Do.	Colonel C. K. Drew	29	1,627 48	43	6,545 00		
Do.	Colonel H. D. Wickersham	36	4,080 00	82	13,860 00		

Do.....	Captain F. B. Graves.....	23	3,085 00	61	8,545 00	6,080 00
Do.....	Captain D. B. Whitel.....	151	8,380 00	610	24,988 00	
Moorehead City, N. C.....	Captain W. H. Barlow.....	1	80 00	35	3,061 00	
Do.....	Captain J. D. Stubbs.....	247	7,750 86	105	3,745 35	
Morristown, Tenn.....	Lieutenant Thomas Brown.....	154	7,699 00	92	5,159 50	
Murfreesboro', Tenn.....	Captain O. Van Hise.....					3,151 00
Do.....	Lieutenant Robert Mercer.....					
Do.....	Captain G. W. Orr.....	64	3,119 00	41	3,378 50	
Do.....	Captain G. W. Marshall.....					21,006 00
Do.....	Captain E. B. Kirk.....	1,478	96,607 00	11,496	764,130 00	8,116 00
Nashville, Tenn.....	do.....					18,688 00
Do.....	Lieutenant C. A. Brown.....	110	4,601 50	128	9,747 50	2,350 00
Natchez, Miss.....	Captain J. W. Scully.....	83	7,889 50	217	20,905 00	
Do.....	Lieutenant James B. Wright.....	40	2,306 00	40	3,316 00	55 00
Natchitoches, La.....	Colonel H. C. Ransom.....			19	1,126 00	
New Braumfls, Texas.....	Captain D. W. H. Day.....	288	20,507 00	632	34,671 50	
Newbern, N. C.....	Captain J. D. Stubbs.....	32	3,146 50	44	4,761 50	
Do.....	Lieutenant E. Crawford.....	5	330 00	12	997 00	
Do.....	Lieutenant D. D. Bullock.....	453	38,163 60			375 00
New Haven, Conn.....	Lieutenant S. F. True.....	89	1,913 00	138	4,596 00	
New Market, Tenn.....	Captain C. B. Chittenden.....	1,109	28,577 75	377	19,053 25	
New Orleans, La.....	Colonel E. J. Strang.....	2,405	193,528 36	1,744	198,613 50	5,981 00
Do.....	Colonel J. G. Chandler.....			173	17,803 00	
Do.....	Captain L. L. Moore.....	5,368	401,209 50	3,146	231,411 50	24,877 00
New York, N. Y.....	Captain Nat. Low.....	324	17,960 50	103	6,621 50	
Norfolk, Va.....	Captain A. S. Flagg.....	97	3,380 50	31	2,012 50	
Do.....	Major W. H. Daniels.....	194	15,248 00			
Ogdensburg, N. Y.....	Captain E. D. Chapman.....					50,120 00
Omaha, N. T.....	Captain J. H. Wilson.....	25	1,708 00	26	2,505 00	24,132 50
Paducah, Ky.....	Captain B. F. Kelly.....	249	19,291 00	202	16,774 00	
Parkersburg, W. Va.....	Captain A. Fisher.....	9	345 50			
Do.....	Captain L. W. Oakly.....	265	13,459 00	95	6,894 00	
Paris, Ky.....	Captain C. W. Folsom.....	91	4,350 50	45	2,502 50	
Petersburg, Va.....	Captain George R. Orme.....	2,640	203,585 95	225	30,408 50	12,014 00
Philadelphia, Pa.....	Captain A. S. Ashmead.....	43	3,857 00	2,768	236,188 04	
Do.....	Captain George T. Browning.....	795	52,966 00			
Pittsburg, Pa.....	Colonel Charles H. Tompkins.....			200	13,636 50	
Do.....	Colonel O. Cross.....	117	10,445 00	2,103	163,881 50	195 00
Do.....	Captain E. C. Camp.....	3	320 00			
Plymouth, N. C.....	Captain C. M. Merritt.....	30	1,204 00	28	1,593 00	
Pine Bluff, Ark.....	Lieutenant William Laner.....					3,473 00

## Statement of sales of public animals, &amp;c.—Continued.

Station.	Names.	Horses.	Amount.	Mules.	Amount.	Horses and mules. No. not reported.	Amount.
Portsmouth, Va.	Captain J. R. Dndley			50	\$4,649 00		
Portsmouth Grove, R. I.	Captain C. A. Reynolds						\$444 00
Portland, Maine	Captain Henry Inman	25	\$2,671 75				
Port Hudson, La.	Captain W. R. Wilson						7,496 75
Prairie du Chien	Captain Ammin Cutter	6	497 50				
Pulaski, Tenn	Captain E. B. Whitmore	75	2,811 50				
Quincy, Ill.	Captain R. C. Rutherford						
Raleigh, N. C.	Captain A. M. Garoutte	530	32,886 00	1,243	82,519 50		759 00
Readville, Mass.	Captain J. W. McKim						965 00
Richmond, Va.	Captain W. H. D. Cochrane	5,326	200,381 25	3,577	228,077 75		
Do.	Captain George B. Cadwallader	854	25,500 50	380	35,023 40		
Roanoke Island, N. C.	Captain N. H. Wheeler						2,541 50
Rogersville, Tenn.	Captain W. A. Wainwright	31	554 50		32 50		
Roxboro', Tenn.	Captain A. M. Garoutte	12	518 00	99	5,852 00		
Sacramento, Cal.	Lieutenant E. H. Ellis	17	178 20				
St. Louis, Mo.	Captain Ingham Coryell	2,524	115,384 00	1,690	94,970 00		
Do.	Captain J. L. Trumbull	2,781	153,768 00	5,477	442,092 00		
Do.	Captain E. Seeley	175	11,797 00				1,909 00
Do.	Captain Alonzo Eaton	549	57,815 00				
Do.	Captain J. L. Woods	155	20,871 00	1,685	215,471 00		
St. Paul, Minn.	Captain H. I. Carver					oxen	7,866 00
Salisbury, N. C.	Captain D. W. H. Day	1,305	112,800 50	30	2,588 00		
Sandy Hook, Md.	Captain E. B. Bean	165	7,495 00	285	15,843 00		15,060 00
San Antonio, Texas	Colonel H. C. Ransom	131	6,957 00				
Savannah, Ga.	Lieutenant John S. Berger	424	13,269 00	1,206	65,098 00		
Do.	Colonel E. B. Carling			109	4,526 00		25,228 00
Selma, Ala.	Captain J. R. Boyle	699	32,845 00	48	6,045 00		31,391 00
Do.	Captain H. B. Whitsel	6	665 00	799	45,310 00		49,080 00
Do.	Lieutenant William Downard	19	1,834 96	10	1,255 00		
Sovierville, Tenn.	Captain W. J. Colburn	12	326 00	18	1,519 89		
Shreveport, La.	Lieutenant P. R. Skinner	65	1,029 00				
Smithland, Ky.	Lieutenant E. Cruwford	1	100 00	590	20,515 00	oxen	100 00



Springville, Ill.....	Captain James Campbell.....	48	3, 636 00	1, 587	177, 638 00	oxen	43, 454 75
Springfield, Mo.....	Captain R. B. Owen.....	90	3, 432 60	14	357 00		
Staunton, Va.....	Captain H. J. Farnsworth.....	797	31, 936 30	81	3, 000 00		
Stevenson's Depot, Va.....	Captain J. T. Wray.....						11, 202 00
Sweet Water, Tenn.....	Captain W. A. Wainwright.....						
Syracuse, N. Y.....	Captain H. A. Dupuy.....	9	661 00	3	255 00		
Talladega, Ga.....	Captain Charles H. Deane.....	308	7, 308 00	267	14, 122 00		253 00
Tallahassee, Fla.....	Captain W. H. Hutchinson.....	48	2, 107 20	27	1, 684 80		
Do.....	Captain John J. McClelland.....	35	1, 928 00	45	10, 283 00		
Do.....	Captain W. L. Lathrop.....	11	1, 594 00	27	3, 301 00		
Toomer, N. C.....	Captain A. M. Garoutte.....	3	137 00	37	1, 661 00		
Trenton, N. J.....	Captain John Whipple.....	17	2, 415 00	856	67, 566 00		
Do.....	Major R. C. Morgan.....	4	513 00				
Vicksburg, Miss.....	Captain G. L. Parker.....	316	19, 894 00	397	33, 493 75	oxen	16, 315 00
Victoria, Texas.....	Major E. J. Smith.....	21	809 00	143	6, 656 00		
Do.....	Captain Thomas Palmer.....	70	1, 901 00	175	6, 410 50		
Do.....	Lieutenant Joseph Hedges.....	93	3, 185 75	96	6, 239 00		
Warrensburg, Mo.....							21, 354 00
Warrenton, N. C.....	Captain A. M. Garoutte.....	63	2, 791 00	51	2, 843 00		
Washington, D. C.....	Colonel C. H. Tompkins.....	8	1, 340 00	13, 214	812, 661 08		3, 447 20
Do.....	Captain C. M. Merritt.....	22	1, 372 00	15	950 50		
Waynesboro', Tenn.....	Captain O. Van Hise.....	78	1, 091 00	31	474 00		
Wheeling, W. Va.....	Captain Gus. Artzman.....	34	1, 150 00				
Do.....	Captain R. S. Gardner.....	1, 404	99, 977 06	293	13, 485 96		
Wilmington, Del.....	Captain G. T. Browning.....	200	9, 197 00				
Do.....	Captain C. H. Gallagher.....	1, 962	118, 856 00	3, 906	373, 057 50		
Wilmington, N. C.....	Captain D. W. H. Day.....	44	2, 704 00	15	671 00		
Do.....	Captain J. D. Stubbs.....	28	1, 825 50	100	5, 498 00		
Allentown, Penn.....	Captain G. T. Browning.....	199	16, 578 00				
Alliance, Penn.....	do.....	194	12, 480 00				
Canton, Ohio.....	do.....	200	12, 350 00				
Carlisle, Penn.....	do.....	200	8, 303 50				
Columbiana, Ohio.....	do.....	100	5, 278 00				
Chester, Penn.....	do.....	100	8, 857 00				
Easton, Penn.....	do.....	195	11, 111 00				
Greensburg, Penn.....	do.....	100	10, 011 00				
Indiana, Penn.....	do.....	150	12, 750 00				
Johnstown, Penn.....	do.....	196	9, 525 00				
Lancaster, Penn.....	do.....	396	22, 855 00				
Massillon, Ohio.....	do.....	199	14, 447 00				
Mechanicstown, Penn.....	do.....	58	3, 794 00				

Statement of sales of public animals &c.—Continued.

Station	Names.	Horses.	Amount.	Mules.	Amount.	Horses and mules. No. not reported.	Amount.
Mifflintown, Penn.	Captain G. T. Browning	191	\$9,991 00				
Milton, Penn.	do.	100	9,413 00				
Newport, Penn.	do.	199	13,132 00				
Pottsville, Penn.	do.	200	31,994 34				
Reading, Penn.	do.	596	37,526 00				
Salem, Ohio.	do.	100	6,352 00				
Titusville, Penn.	do.	100	8,070 00				
Westchester, Penn.	do.	284	15,772 00				
Williamsport, Penn.	do.	349	23,976 00				
York, Penn.	do.	348	20,814 00				
Crestline, Ohio	Captain C. Hay			480	\$43,375 00		
Easton, Penn.	do.			194	14,620 00		
Fort Wayne, Ind.	do.			826	80,125 00		
Holidaysburg, Penn.	do.			199	12,683 00		
Huntington, Penn.	do.			200	14,960 00		
Indiana, Penn.	do.			150	11,160 00		
Mifflintown, Penn.	do.			200	18,335 00		
Reading, Penn.	do.			200	14,505 00		
Scranton, Penn.	do.	12	1,001 00	196	15,171 00		
Williamsport, Penn.	do.			198	14,849 00		
Chambersburg, Penn.	Captain W. M. Woods	324	26,461 50	194	12,348 50		
Newville, Penn.	do.	100	7,222 50	100	6,537 00		
Pottsville, Penn.	Captain E. C. Reichenbach			200	20,327 00		
Mauch Chunk, Penn.	A. S. Ashmead			199	19,400 00		
Total		104,474	5,630,417 39	102,954	7,685,225 96		\$1,953,432 19

SUMMARY.

Number of animals sold:	
104,474 horses .....	\$5, 630, 417 39
102,954 mules .....	7, 685, 225 96
Horses, mules, and oxen, number not reported .....	1, 953, 432 19
Total received .....	15, 269, 075 54

Since the foregoing statement was prepared many surplus and unserviceable animals have been sold at public auction. There are yet a number of volunteer cavalry regiments in service, (some to be mustered out,) the horses of which, when turned over to the quartermaster's department, will be disposed of as rapidly as possible.

So far as reports received enable me to determine, the average price per animal obtained at public sales was, for horses fifty-three dollars and eighty-nine cents ( $\$53\frac{89}{100}$ .) and for mules seventy-four dollars and sixty-four cents ( $\$74\frac{64}{100}$ .) For horses the highest average price, per animal, received at any of the auction sales was at Harrisburg, Pennsylvania, being one hundred and eighty-four dollars and eighty-two cents ( $\$184\frac{82}{100}$ .) For mules the highest average price per animal was obtained at Memphis, Tennessee, being two hundred and four dollars and forty-six cents ( $\$204\frac{46}{100}$ .) The highest price received for a single horse at any public sale was at Chester, Pennsylvania, being two hundred and eighty dollars, (\$280,) and for a single mule the highest price received was at Harrisburg, Pennsylvania, being three hundred and twenty-five dollars (\$325.)

It having been found impossible to determine the actual cost of many of the horses at the Gisboro' depot on account of the number captured and carried irregularly on invoice, it was, with your approval, recommended by this division, and ordered by the War Department, (June 8, 1865,) that officers purchasing horses at that depot, under paragraph 1143, Revised Army Regulations, should be permitted to purchase them at actual value, to be determined by a board of inspecting officers, and approved by this office, which value was in no case to be less than one hundred dollars (\$100) per animal. Under this order there were sold to officers from the Gisboro' depot, during the last fiscal year, including sales, at appraised value, to civilians, by special authority of the War Department, two hundred and eighty-one (281) horses, for thirty-seven thousand two hundred and thirty-seven dollars and fifty cents ( $\$37,237\frac{50}{100}$ .) being an average price of one hundred and thirty-two dollars and fifty-one cents ( $\$132\frac{51}{100}$ ) per animal.

There were on hand at depots, June 30, 1866, in the several military departments from which reports were received at this office, three thousand eight hundred and twenty-nine (3,829) cavalry horses, eight hundred and sixteen (816) artillery horses, and ten thousand nine hundred and twelve (10,912) mules, distributed as follows :

Departments.	Cavalry horses.	Artillery horses.	Mules.
Middle.....	140	.....	30
Washington.....	252	198	891
Virginia.....	434	69	195
North Carolina.....	218	86	94
Tennessee.....	17	140	120
Georgia.....	45	.....	84
Louisiana.....	113	.....	198
Texas.....	1, 633	151	1, 400
Missouri.....	977	172	7, 900
Total.....	3, 829	816	10, 912

The great number of animals belonging to the United States, which, at the close of the war, were known to be in possession of persons who had no legal or rightful claim thereto—many of said animals having been temporarily abandoned in the States, north and south, loyal and disloyal, from the necessities of military operations—induced the promulgation of General Orders No. 61, Quartermaster General's Office, October 10, 1865, directing the seizure of such animals wherever found, and their delivery to the nearest quartermaster. Disbursing officers of the department were authorized by this order to pay to persons not employed by the government, for every public animal thus delivered up, or finally recovered upon information furnished by them, the sum of fifteen (15) dollars; and for the return of valuable blooded animals belonging to the United States special rewards were authorized to be paid, not exceeding ten per centum of the value of the animals, when approved by the Quartermaster General. This order, however, by an express clause therein contained, was not to be construed as extending to animals which, in certain southern States, had, by due authority of military commanders, been placed in charge of farmers and planters, to be recruited and used for a time in saving the crops in districts devastated by military operations.

Notwithstanding the efforts of this division to secure the return to the quartermaster's department of the animals thus loaned, especially in the department of Virginia, where many of them had been distributed by provost marshals, it was found impracticable in many instances to recover them, as they were reported to have been given to needy persons, and, being broken-down stock, were supposed at the time to be free gifts, while in many cases no receipts were exacted from the persons to whom the animals were issued. The promulgation of General Orders No. 15, Quartermaster General's Office, February 15, 1866, hereinafter referred to, precluded any further action in reference to the collection of abandoned public animals.

Under General Orders No. 61, before mentioned, many abandoned and stolen animals, some of them of considerable value, were seized and turned over to the quartermaster's department. In all cases in which seizures were thus made, a reasonable time was allowed to parties in whose possession the animals had been found, to prove their title, if any, to the same; and only in the event of failure or neglect to do so were such animals finally held and disposed of by the government. Many claims for the return of animals thus seized were submitted to and examined by this division; and in a large majority of these cases it was fully established that the government had never parted from its title, and that the property rightfully belonged to it. In a comparatively few cases, however, claimants presented satisfactory proof of title, and the animals were returned, or, where that was impracticable, animals of equal value were delivered to them.

Complaints growing out of the rigid enforcement of General Orders No. 61 induced the revocation of so much of them as offered rewards for the recovery of public animals. Hence the issuance of General Orders No. 77, Quartermaster General's Office, December 15, 1865, reiterating the provisions of General Orders No. 61, with the exception of those portions relating to rewards.

The order as thus modified continued in force two months, with the explanatory General Orders No. 4, Quartermaster General's Office, January 9, 1866, instructing officers that General Orders No. 77 were not to be so construed as to authorize the seizure of animals which, being branded "C. S.," were not shown to have ever been in the possession of the United States, or to have been included in any surrender of the rebel armies.

Under these modified orders, seizures of public animals in the possession of unauthorized persons continued to be made by officers on duty in the several military departments until the 15th of February, 1866, when, by General Orders No. 15, Quartermaster General's Office, the suspension of General Orders No. 77 was directed, and it was ordered that horses and mules, abandoned by the armies

of the United States in the course of military operations, should not be seized unless under instructions from competent authority thereafter to be issued, and that, as it was impossible generally to distinguish between abandoned and stolen or captured animals after the lapse of months, seizures of animals would be made only when there was reasonable ground for believing that they had been stolen, or had strayed since the termination of active hostilities. These are the orders now in force on this subject.

The following is a statement of claims on file, received, and acted on during the fiscal year ending June 30, 1866, viz :

	No.	Total No.	Amount.	Total amount.
Claims on file not acted on July 1, 1865..	1,382	.....	\$551,169 00	\$3,263,483 69
Received during the year .....	10,114	.....	2,712,314 69	
		11,496		
Approved under act of July 4, 1864.....	109	.....	50,702 25	3,263,483 69
Approved purchase vouchers .....	802	.....	132,330 00	
Rejected and suspended.....	2,711	.....	788,901 11	
Not acted on.....	7,874	.....	2,291,550 33	
		11,496		

In the adjudication of the above claims there were written during the year four thousand five hundred and thirty-seven (4,537) letters and endorsements. On the current miscellaneous business of this division there were written, within the same period, three thousand six hundred and fifty-three (3,653) letters and endorsements.

A large number of vouchers for horses purchased during the war continue to be presented for settlement.

In view of the fact that sufficient time has elapsed since the termination of the war to allow all parties holding vouchers to have presented them for settlement, I would respectfully recommend—

1. That disbursing officers be directed to withhold payment on all vouchers for purchases of quartermasters' stores made prior to April 9, 1865, except when approved by the Quartermaster General.

2. That all vouchers for quartermasters' stores purchased prior to April 9, 1865, presented for examination and settlement to this division, be accompanied by the application (under oath) of the party in whose favor they are drawn, stating the town or county of which he claims to be a citizen, his residence and post office address, together with a succinct history of the origin of the claim and satisfactory explanation of the delay in its presentation for settlement, and for what reason, if ever presented to any officer, its settlement was refused; that he was the actual owner of the identical stores described in the vouchers; that he has not received payment from any officer of the United States, nor made claim for the said stores except as stated by him, and that the account is correct and just, and remains due and unpaid.

Applications under the act of Congress of July 4, 1864, continue to be filed in this division. The greater number of these claims come from Tennessee, Kentucky, Missouri, West Virginia, and Adams county, Pennsylvania. Property for the use of the army was taken very irregularly in these localities, and the impressments can seldom be traced to any proper authority.

Impressments made in Kentucky and Missouri can generally be traced to the general or special authority of commanding officers, which authority usually directs that the property of well-known secessionists be seized, and none other; but, in many cases, it is apparent that the impressing officers paid but little attention to the loyalty of parties from whom seizures were made.

The rule of evidence in a claim for animals seized or impressed is necessarily



stricter as to proof of "actual use" than in one for any other kind of property the law requiring the Quartermaster General to be satisfied that the property was actually taken for the use of and used by the United States army. It is generally impossible, from the very nature of the case, for the claimant to prove more than that his property was taken by persons wearing the uniform of, or representing themselves to be, officers of the army of the United States. Therefore, unless the officer alleged to have taken the property, or some other party cognizant of the facts, testifies that it has been appropriated to the use of the army, it is impossible to distinguish between a claim for property applied to such use and one for property taken for the private use and emolument of the innumerable camp-followers that hang on the skirts of every army for purposes of depredation and plunder. "Horse-stealing" was so notorious during the war that further explanation as to the necessity of requiring the strictest evidence of actual and legitimate use by the army in claims of this character is deemed unnecessary.

In a majority of claims for the value of animals alleged to have been taken, especially in those from Tennessee, the claimants do not even know by whom their property was seized, and allege that it was taken by the general in command of the troops, or by the colonel or quartermaster of a particular regiment. In many instances, in this class of claims, where the officers have been communicated with in regard to their alleged seizures, they state that they know nothing of the claims, or that, if their commands were at the time in the localities in which the claims originated, the property *may* have been taken by their officers or men. With only such information, no examination of the merits of the claims can be made; while, on the other hand, where memoranda receipts are filed the signatures to which can be verified by official records, or by the acknowledgment of the officers by whom they were given, the work of discriminating as to whether they are just and pertain to this department, or are of a directly opposite character, is materially lessened.

Great embarrassment results from the want of some uniform and reliable system of verifying the loyalty of claimants. It is a matter which admits of so much difference of opinion that very difficult questions often arise in reconciling conflicting evidence on this point. The government has always the benefit of any doubt as to the loyalty of claimants. Heretofore, in obtaining evidence upon this subject, the department, owing to the limited number of officers at its command, has been compelled to rely, to a great extent, upon the gratuitous assistance of officers serving in other bureaus, adjutant generals of States, county officers, and well-known and reliable citizens. The plan has succeeded well so far, but is subject to abuse, and should only be resorted to in cases of absolute necessity. As a substitute for this, I would recommend that every claimant be hereafter required to give public notice, for three successive weeks, in a newspaper of general circulation in his town or county, of his intention to make claim before this department, giving notice to all persons who know of any reason why he is not entitled to receive compensation as a loyal citizen to file their objections with the Quartermaster General within thirty days. This measure would relieve the office of a great amount of clerical labor, and would also be protective of the interests of the government, and of those of loyal citizens entitled to compensation.

A large number of claims of enlisted men for the value of their private horses turned over to the government after the passage of the act of June 20, 1864, are on file, awaiting satisfactory evidence of identity of claimants, ownership, and accountability for the property. The irregular and summary manner in which the men were frequently compelled to turn over their horses, the absence of proper returns therefor, and the difficulty of procuring the evidence of company commanders, have delayed the settlement of many of these claims.

A number of claims have also been presented for the value of horses pur-



chased from the government at public sale, and subsequently taken from the government vendees on writs of replevin. Inasmuch as the department holds that a title given by the government at a regularly authorized sale is valid against all claims, no compensation has been made in any of these cases.

In the discharge of the responsible duties which devolve upon me, I have been ably and zealously assisted by Brevet Major Joseph T. Power, assistant quartermaster, who has been specially charged with the examination of claims pertaining to this division; and in the general management of the business of the office—especially of that relating to the proper care and disposition of public animals—I have had the valuable and efficient aid of the following-named officers, acting under my orders: Brevet Lieut. Colonel L. Lowry Moore, assistant quartermaster, Washington, D. C.; Brevet Lieut. Colonel J. L. Trumbull, assistant quartermaster, St. Louis, Missouri; Brevet Major E. C. Reichenbach, assistant quartermaster, Harrisburg, Pennsylvania; Captain George T. Browning, assistant quartermaster, Gisboro', D. C.; Captain C. Hay, assistant quartermaster, Washington, D. C.; and Captain C. H. Gallagher, assistant quartermaster, Wilmington, Delaware.

Of these competent officers three yet remain in the service of this division, viz: Brevet Lieut. Colonel L. Lowry Moore, Brevet Major Joseph T. Power, and Captain George T. Browning—the two latter of whom I would respectfully recommend for promotion to the rank of lieutenant colonel by brevet for meritorious services in the quartermaster's department. The other officers above mentioned have been honorably mustered out of the service.

Appended hereto are the general orders of the Quartermaster General relating to public animals, to which reference is made in this report, marked B, C, D, E, F, G, and H.

In closing this report, I beg to express my high appreciation of the kindness and courtesy which have marked the official intercourse of the Quartermaster General and the several chiefs of divisions with this branch of the office; and I cherish the hope and belief that these mutually agreeable relations will, in the future as in the past, while lessening the burden of labor, contribute to the success of the important operations of the quartermaster's department.

I have the honor to be, general, very respectfully, your obedient servant,

JAMES A. EKin

*Bvt. Brig. Gen. U. S. A., in charge First Division Q. M. G. O.*

Brevet Major General M. C. MEIGS,

*Quartermaster General U. S. Army, Washington, D. C.*

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B.

[General Orders No. 24.]

QUARTERMASTER GENERAL'S OFFICE,  
*Washington, D. C., April 29, 1865.*

I. In carrying out the provisions of General Orders No. 77, from the War Department, Adjutant General's office, dated 28th April, 1865, so far as relates to the quartermaster's department, all chartered steamers, both ocean and river, which, under the new military situation, can be spared, will be discharged immediately.

II. Ocean steamers at distant ports will be loaded with the supplies which are no longer needed at such ports, and returned either to the depots of New York or of Washington.

III. Troops under orders to return north will be transported in the returning steamers, or in the steamers which are the property of the department.

IV. The chiefs of division of this office, and the chiefs of the principal depots, will immediately report to the Quartermaster General the extent of the reduction which they are able to make in the force of laborers, operatives, clerks, and agents under their command.

V. It is understood that troops will be made available for most of the work at the depots, and that thus very large reductions in the rolls of employés will be possible.

VI. All railroad construction and repairs, except those needed on lines by which troops are still supplied, or by which troops may be marching, will cease.

VII. Construction and extension of all barracks, hospitals, and other buildings will cease, unless authorized upon special report, which, in all cases of necessity, should be made immediately by telegraph.

VIII. Property returns of all property on hand on the 30th April should be made up immediately, and forwarded to this office, with recommendations as to the dispositions to be made thereof—whether to be stored or to be sold, and where to be stored or sold, in each case.

IX. The efforts of all officers of this department will be directed to the greatest possible reduction of expenditure consistent with the efficiency and comfort of the troops now about to be withdrawn from active operations in the field.

X. Attention of all officers of the quartermaster's department is specially called to paragraphs II and IX, of General Orders No. 77, which are herewith republished, as follows:

"II. That the Quartermaster General discharge all ocean transports not required to bring home troops in remote departments; all river and inland transportation, except that required for necessary supplies to troops in the field. Purchases of horses, mules, wagons, and other land transportation will be stopped; also purchases of forage, except what is required for immediate consumption. All purchases for railroad construction and transportation will also be stopped.

"IX. The chiefs of the respective bureaus will immediately cause property returns to be made out of the public property in their charge, and a statement of the property in each that may be sold upon advertisement and public sale without prejudice to the service."

M. C. MEIGS,

*Quartermaster General, Brevet Major General.*

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C.

[General Orders No. 28.]

QUARTERMASTER GENERAL'S OFFICE,  
*Washington, D. C., May 8, 1865.*

All horses and mules on hand in the quartermaster's department not fit for immediate issue will be advertised and sold, at public sale, as soon as the necessary public notice can be given.

Brevet Brigadier General Ekin, chief of the first division of the Quartermaster General's office, will telegraph the necessary instructions to each depot of animals.

Sales should be commenced within one week, and continued at regular intervals until all unserviceable animals are disposed of.

They should be sold at the depots at which, or near which, they are kept at the time the order is received.

M. C. MEIGS,

*Quartermaster General, Brevet Major General.*

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D.

[General Orders No. 42.]

QUARTERMASTER GENERAL'S OFFICE,  
*Washington, D. C., July 15, 1865.*

Large quantities of property belonging to the quartermaster's department of the United States army are now being sold by order of the War Department. Special reports of such sales will be made and sent to the Quartermaster General at Washington.

These reports will state the kind of articles sold and the amount realized by said sale, according to the annexed form.

They will be forwarded to the Quartermaster General's office daily, so long as the sales continue.

These reports are not intended to supersede the regular accounts of the sales of public property to be sent with officers' accounts and returns as required by the army regulations, which must be sent as heretofore.

The first reports after the receipt of this order will embrace all sales made since the 1st of May last.

Sales should be made at auction by persons employed for that purpose by the officers of this department, or by clerks already employed who may be competent.

The compensation to be allowed to persons specially employed to make such sales should be a reasonable daily or monthly salary, not a commission or percentage on the amount sold.

M. C. MEIGS,

*Quartermaster General, Brevet Major General.*

FORM OF REPORT.

Abstract of sales of public property, made at \_\_\_\_\_, under the direction of \_\_\_\_\_, on the \_\_\_\_\_ of \_\_\_\_\_, 186 \_\_\_\_\_.

Date of sale.	Description of property.	Amount.		Total.	
		Dolls.	Cts.	Dolls.	Cts.
	<b>REGULAR SUPPLIES.</b>				
	Fuel .....				
	Forage and straw.....				
	<b>BARRACKS AND QUARTERS.</b>				
	Barracks, quarters, hospitals .....				
	Material for do. do.....				
	<b>TRANSPORTATION OF THE ARMY.</b>				
	Ships, brigs, and other sail vessels .....				
	Steamers .....				
	Horses and mules, draught.....				
	Harness of all kinds.....				
	Wagons, carts, drays, ambulances, &c., &c., &c.....				
	<b>INCIDENTAL EXPENSES.</b>				
	Forges, horse and mule shoes and nails, &c., &c.....				
	Iron, steel, blacksmiths' tools, &c.....				
	Cavalry horses.....				
	Artillery horses .....				
	Mules.....				
	Clothing and camp and garrison equipage.				
	Total amount.....				

E.

[General Orders No. 61.]

QUARTERMASTER GENERAL'S OFFICE,  
Washington, D. C., October 10, 1865.

The attention of officers on duty in the several military departments is called to the great number of animals belonging to the United States in the possession of persons who have no legal title or rightful claim thereto.

Such animals will be seized wherever found and turned over to the nearest quartermaster.

In all cases, upon the affidavit of the parties from whom the property is taken that they have reason to believe their title valid, and that they will produce evidence to prove it, the property will be retained in custody until a thorough investigation is made. All doubtful cases will be referred to the Quartermaster General for his decision.

All animals which have once belonged to the United States branded U. S., all those impressed either in loyal or disloyal districts, all those captured from the enemy, and any captured by the enemy from the United States and subsequently sold or disposed of by said enemy, should still be regarded as the property of the United States, and should be seized and retained as such, unless the persons in possession of the same can show title thereto by

virtue of some authorized government sale, indicated by the brand *I. C.* or *S.*, or by the receipt of some duly authorized officer. The brand *U. S.* is *prima facie* evidence that the animals belong to the government. The brand *U. S.*, *I. C.*, or *S.*, under the mane, is *prima facie* evidence that they have been regularly sold by the United States, and animals thus marked should not be seized except upon good evidence of fraud.

To any person or persons not employed by the government, who shall deliver a public horse or mule to the quartermaster's department, with affidavit showing whence the property was obtained, or who shall furnish such information as will lead to the restoration of any such property to the possession of the United States, the disbursing officers of the quartermaster's department are hereby authorized to pay the sum of fifteen dollars for each and every animal thus finally recovered; but this fee shall be paid only after the parties from whom the animals were seized shall have had reasonable time to prove their title, if any, to the same, and shall have neglected or failed to do so, and then only on the certificate of the quartermaster who received the property, who shall certify the day and date the animal was taken up on his returns, (Abstract N,) with the name of the person from whom the property was taken, and of the person to whom the reward is due.

This reward shall not be paid to any person who, having such property in possession, shall voluntarily deliver up the same; but such persons shall have the privilege, upon such delivery, of purchasing said property at the actual value of the same, upon application to the nearest military commander.

Special rewards will be paid for the return to the possession of the quartermaster's department of any valuable blooded animals belonging to the United States, (not exceeding ten per centum of the value of the animal,) when approved by the Quartermaster General.

This order is not to be construed as extending to animals which, in certain southern States, have been, by due authority of military commanders, placed in charge of farmers and planters to be recruited and used for a time in saving the crops in districts devastated by military operations.

M. C. MEIGS,  
Quartermaster General, Brevet Major General.

F.

[General Orders No. 77.]

QUARTERMASTER GENERAL'S OFFICE,  
Washington, D. C., December 15, 1865.

So much of General Orders No. 61, from this office, dated October 10, 1865, as offers rewards for the recovery of public animals, is hereby revoked, so that the order will read as follows:

The attention of officers on duty in the several military departments is called to the great number of animals belonging to the United States in the possession of persons who have no legal title or rightful claim thereto.

Such animals will be seized wherever found and turned over to the nearest quartermaster.

In all cases, upon the affidavit of the parties from whom the property is taken that they have reason to believe their title valid, and that they will produce evidence to prove it, the property will be retained in custody until a thorough investigation is made. All doubtful cases will be referred to the Quartermaster General for his decision.

All animals which have once belonged to the United States branded *U. S.*, all those impressed either in loyal or disloyal districts, all those captured from the enemy, and any captured by the enemy from the United States and subsequently sold or disposed of by said enemy, should still be regarded as the property of the United States, and should be seized and retained as such, unless the persons in possession of the same can show title thereto by virtue of some authorized government sale, indicated by the brand *I. C.* or *S.*, or by the receipt of some duly authorized officer. The brand *U. S.* is *prima facie* evidence that the animals belong to the government. The brand *U. S.*, *I. C.*, or *S.*, under the mane, is *prima facie* evidence that they have been regularly sold by the United States, and animals thus marked should not be seized except upon good evidence of fraud.

This order is not to be construed as extending to animals which, in certain southern States, have been, by due authority of military commanders, placed in charge of farmers and planters to be recruited and used for a time in saving the crops in districts devastated by military operations.

M. C. MEIGS,  
Brevet Major General U. S. A., Quartermaster General.

G.

[General Orders No. 4.]

QUARTERMASTER GENERAL'S OFFICE,  
*Washington, D. C., January 9, 1866.*

Officers on duty in the several military departments are hereby instructed that General Orders No. 77, from this office, dated December 15, 1865, are not to be so construed as to authorize the seizure of animals which, being branded "C. S." are not shown to have ever been in possession of the United States, or to have been included in any surrender of the rebel armies.

M. C. MEIGS,  
*Quartermaster General, Brevet Major General.*

H.

[General Orders No. 15.]

QUARTERMASTER GENERAL'S OFFICE,  
*Washington, D. C., February 15, 1866.*

General Order No. 77, of the Quartermaster General's office, relating to the seizure of stock, is suspended.

Horses and mules abandoned by the United States armies in the course of military operations will not be seized, unless under instructions from competent authority hereafter to be issued.

As it is impossible generally to distinguish between abandoned and stolen or captured animals after the lapse of months, seizures of animals will be made only when there is reasonable ground for believing that they have been stolen or strayed since the termination of active hostilities.

M. C. MEIGS,  
*Quartermaster General, Brevet Major General.*

No. 3.

CAVALRY DEPOT, GISBORO', D. C.

QUARTERMASTER GENERAL'S OFFICE, FIRST DIVISION,  
*Washington, D. C., October 11, 1866.*

GENERAL: I have the honor to submit the following supplementary report, (referred to in my annual report of the 27th ultimo,) relating to the organization of the cavalry bureau, and to the operations, under it, of the depot at Gisboro', D. C.

#### ORGANIZATION OF THE CAVALRY BUREAU.

The cavalry bureau was established by authority of General Orders No. 236, War Department, Adjutant General's Office, July 28, 1863. It was charged with the organization and equipment of the cavalry forces of the army, and with the duty of providing for the mounts and remounts of the same. Under the orders referred to, the purchases of all horses for the cavalry service were directed to be made by officers of the quartermaster's department, under the direction of the chief of the cavalry bureau, and inspections of horses offered for the cavalry service were ordered to be made by cavalry officers. Depots were also directed to be established for the reception, organization, and discipline of cavalry recruits and new regiments, and for the collection, care, and training of cavalry horses, said depots to be under the general charge of the cavalry bu-

reau. The principal depots for public animals established by authority of this order were those at Gisboro', D. C.; St. Louis, Missouri; Greenville, Louisiana; Nashville, Tennessee; Harrisburg, Pennsylvania; and Wilmington, Delaware; all of which contributed much to the efficiency of the service.

#### CHIEFS OF THE BUREAU.

Under General Orders No. 237, War Department, Adjutant General's Office, July 28, 1863, instructions, intended to promote the efficiency of the cavalry service, were promulgated for the guidance of all concerned, and Major General George Stoneman was announced as the chief of the cavalry bureau in Washington.

On the 2d of January, 1864, by Special Orders No. 1, War Department, Adjutant General's Office, of that date, Brigadier General Kenner Garrard was assigned to the charge of the cavalry bureau, (relieving General Stoneman,) and was also instructed to assume the direct command of the cavalry depot at Gisboro' Point.

By Special Orders No. 39, War Department, Adjutant General's Office, January 26, 1864, Brigadier General Garrard was relieved from the charge of the cavalry bureau, and Brigadier General J. H. Wilson was assigned to the charge thereof.

On the 7th of April, 1864, by General Orders No. 154, War Department, Adjutant General's Office, of that date, General Wilson was relieved as chief of the cavalry bureau, and on the 14th of the same month the following General Orders were promulgated:

[General Orders No. 162.]

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,  
*Washington, April 14, 1864.*

#### IN RELATION TO THE CAVALRY BUREAU.

I. That the cavalry bureau shall be under command of the chief of army staff, who shall perform the duties of chief of the cavalry bureau prescribed by existing orders; and the officers of that bureau, respectively, will report to him.

II. All the duties relating to the organization, equipment, and inspection of cavalry will be performed by a cavalry officer specially assigned to that duty.

III. The duties in relation to purchase and inspection of horses, the subsistence and transportation of horses purchased, will be performed by, and under the direction of, an officer of the quartermaster's department specially assigned to that duty.

IV. Lieutenant Colonel Ekin is assigned to the quartermaster's duties of the cavalry bureau.

By order of the Secretary of War:

E. D. TOWNSEND,  
*Assistant Adjutant General.*

Under paragraph II of the foregoing order, Major William Redwood Price was assigned to duty as acting inspector general of the cavalry bureau.

#### CHIEF QUARTERMASTERS CAVALRY BUREAU.

By Special Orders No. 354, War Department, Adjutant General's Office, August 10, 1863, Lieutenant Colonel C. G. Sawtelle, chief quartermaster cavalry corps, army of the Potomac, was directed to report in person to Major General George Stoneman, chief of the cavalry bureau, and was by him at once assigned to duty as chief quartermaster thereof.

On the 27th of December, 1863, by Special Orders No. 574, War Depart-



ment, Adjutant General's office, of that date, I was assigned to duty as chief quartermaster of the cavalry bureau, (relieving Lieutenant Colonel Sawtelle,) and have continued to perform the duties pertaining thereto, under that assignment, up to the present time.

#### GISBORO' DEPOT.

In the summer of 1863, Major General George Stoneman, then chief of the cavalry bureau, by authority of the War Department, examined several sites in the vicinity of Washington, with the view of establishing a cavalry depot to meet the requirements of the service. The farm of Mr. George W. Young, known as the Gisboro' manor, comprising about six hundred and twenty-five (625) acres, and situated on the northern bank of the Potomac, nearly equidistant from this city and Alexandria, Virginia, was finally selected as better adapted to the purpose than any other locality within the district of country to which the examination was limited.

On the 12th day of August, 1863, the government took possession of the Gisboro' estate, for the use and occupancy of which, as a quartermaster's depot, there was paid to its owner a monthly rental at the rate of six thousand dollars (\$6,000) per annum, from that date until the 31st of August, 1866, when the depot was abandoned, and the farm turned over to its proprietor.

Immediately upon taking possession of the Gisboro' estate, the erection of the requisite stables and buildings for the purposes of the depot was commenced on the bottom land, embracing about three hundred (300) acres. Lieutenant Colonel C. G. Sawtelle, then chief quartermaster of the cavalry bureau, (whom I relieved, as before stated, on the 27th of December, 1863,) was intrusted with the general direction and supervision of the operations at the depot. The construction and quartermaster's departments were successively under the charge of Captain H. A. Dupuy, assistant quartermaster, Captain (now Brevet Lieutenant Colonel) L. Lowry Moore, assistant quartermaster, and Captain George T. Browning, assistant quartermaster. The general superintendents, under whose immediate direction the mechanical and laboring operations were conducted, were successively Messrs. C. H. Snow, J. E. Jones, A. G. M. Prevost, and Henry York.

The following named officers were, for a brief period, military commanders at the depot, and acted under the orders of the cavalry bureau, viz: Colonel Charles R. Lowell, sixth United States cavalry, and Colonel George A. H. Blake, first United States cavalry.

As the work of construction progressed, ample accommodations were provided for all the public animals received at the depot. Within three months after the commencement of operations provision was made for fifteen thousand (15,000) animals, and at the close of the subsequent three months arrangements had been completed for the proper care of thirty thousand (30,000) animals. About twenty-one thousand (21,000) public animals was the largest number in depot at any one time.

In addition to the requisite stables, corrals, stock-yards, forage-houses, workshops, storehouses, mess-houses, steam grist-mill, officers' quarters, &c., there were constructed at the depot three extensive wharves, covering upwards of fifty-four thousand (54,000) square feet, and affording adequate facilities for the lading or unlading of three steamers of the largest class at the same time. All of the stables and buildings were abundantly supplied with water, and also with fire apparatus. In the construction of the water-works there were laid twenty-seven thousand (27,000) feet of water-pipe, varying from three-fourths to six inches in size. The water was forced from the river by steam power, conducted to a reservoir of the capacity of one hundred and fifteen thousand (115,000) gallons, located on an eminence about eight hundred (800) feet from the shore, and thence distributed throughout the depot. The average supply of water to

the several stables and buildings was eighty-five thousand (85,000) gallons per day. A fine steam fire-engine was kept in constant readiness for use, but fortunately its services were but once required during the existence of the depot when a slight loss was sustained by fire, and a large quantity of forage saved from destruction principally through its agency.

Besides the Mansion House and other buildings belonging to the estate, which were advantageously used for purposes connected with the depot, a large number of commodious stables and other buildings (all frame) were erected to meet the wants of the service. Of these, the principal were—

Thirty-two stables, twenty-four of which were 28 by 432 feet, six 28 by 356 one 11 by 32, and one 13 by 29; a hospital and an issuing stable, each containing upwards of 5,000 lineal feet of stabling; nine mess-houses, (three of them two stories,) 28 by 190 feet, 15 by 60, 28 by 140, 28 by 130, 28 by 140, 28 by 50 16 by 50, 16 by 34, and 28 by 40; eighty-nine laborers' quarters—seventy-four 16 by 18, fourteen 12 by 14, and one 16 by 16; ten dwellings—one 28 by 50, (two stories,) four 10 by 24, and the remainder 15 by 40, 16 by 32, 16 by 28, 16 by 20, and 24 by 24; twenty buildings, 28 by 32, 28 by 56, 18 by 32 18 by 31, 15 by 65, 10 by 16, four 16 by 50, four 9 by 22, and the remainder 28 by 432, 28 by 140, 21 by 48, 28 by 300, 20 by 25, and 17 by 17; eleven offices, 28 by 140, (two stories,) 16 by 20, 16 by 38, two 20 by 20, (two stories,) 16 by 38, 12 by 32, 15 by 16, two 26 by 26, and 28 by 75; two blacksmiths' shops, 48 by 160 and 36 by 160; one storehouse, 52 by 150; two forage houses, 112 by 312 and 56 by 220; one engine-house, 17 by 32; and one steam grist-mill, 40 by 80 feet, with coal, hay, and engine-houses attached.

In addition to these buildings, there were put up at the depot seven thousand seven hundred and fifty-eight (7,758) lineal feet of shedding, and twenty-three thousand nine hundred and eighty (23,980) lineal feet of fencing. The stables of the larger class contained each one hundred (100) stalls, and accommodated each two hundred (200) horses. Among the buildings above designated was a hospital for employes, adapted to the accommodation of one hundred and fifty (150) patients. The hospital was successively under the charge of Dr. A. McWilliams and Dr. L. C. Osmun. Many patients were successfully treated. The deaths were comparatively few. Those who died were decently interred in a handsome graveyard which had been prepared in a sequestered spot within the limits of the depot. Their remains have since been carefully removed to and deposited in the beautiful cemetery at Arlington.

There was also at the depot a neat little chapel, (erected for the accommodation of the employes,) in which religious services were regularly held. These services were conducted by Rev. A. M. Stewart, formerly chaplain of the one hundred and second Pennsylvania volunteers, who, by authority of the War Department, was assigned to duty as chaplain at the Gisboro' depot.

The stock-yards at Gisboro' covered a tract of forty-five (45) acres, and accommodated ten thousand (10,000) horses. Each yard was well provided with troughs and hay-racks, and the horses had free access to the river. In the hospital stables there were accommodations for two thousand six hundred and fifty (2,650) horses. Here many thousand horses were received, treated for various diseases, cured, and reissued.

Of the large number of unserviceable animals turned into this depot, about sixty per cent. were recuperated and rendered fit for reissue.

Separate and capacious lots were enclosed for the inspection, branding, and sale of horses.

Attached to the horse corral, which was 710 by 360 feet, and capable of sheltering two thousand horses, was a large mess and forage house, 75 by 95 feet, on the summit of which was a temporary water-tank, of the capacity of three thousand nine hundred and forty-five (3,945) gallons. This building

after the lapse of about a year, being no longer required, was torn down, and the material appropriated to the erection of other buildings which were needed.

The steam-grinding and feed mill (a substantial frame building 40 by 80 feet, with massive granite foundations) was erected in the summer of 1864, and the engine and machinery for the same were furnished and put up by Messrs. C. & J. Cooper, of Mount Vernon, Ohio, under their contract of the 6th of April, 1864, with the undersigned as chief quartermaster of the cavalry bureau. The engine was 100-horse power, with cylinder of twenty-two (22) inches diameter, and twenty-four (24) inches stroke. There were two boilers, of 60-horse power each, and ten pairs of Reed's patent Buckingham thirty (30) inch spring mills. The engine, boilers, machinery, and fixtures of every description, were constructed of the very best materials and in the finest style of workmanship. The contract price paid for the engine and machinery, and for erecting the same, was twenty-six thousand and five hundred dollars, (\$26,500.) The mill was put into operation about the 1st of October, 1864, and proved an entire success. It was of sufficient capacity to grind and mix grain for thirteen thousand (13,000) horses (full rations) per day, amounting to one hundred and fifty-six thousand (156,000) pounds, with cutting arrangements to cut and elevate twenty-five thousand (25,000) pounds of hay per day.

During the earlier progress of the various works at the depot, the mechanical and laboring force employed was upwards of five thousand. After the completion of the buildings the number of employes was considerably reduced, and varied, in subsequent months, from fifteen hundred to one hundred and fifty, according to the requirements of the service. The mess and lodging houses afforded accommodations for twenty-five hundred (2,500) men.

The estimated cost of the various stables, buildings, wharves, water-works, &c., was one million two hundred and twenty-five thousand dollars, (\$1,225,000.)

Annexed is a statement of the number of animals on hand, received, issued, &c., at the Giesboro' depot from October 1, 1863, to August 31, 1866, when the depot was abandoned, (marked A;) following which are statements of sales of miscellaneous public property from the depot, (marked B, C, and D.)

Previously to the abandonment of the depot, all the public property there was either sold at public auction or transferred to other depots of the quartermaster's department, under the instructions of the Quartermaster General.

I am, general, very respectfully, your obedient servant,

JAMES A. EKIN,

*Brevet Brig. Gen. U. S. A., in charge of 1st Division Quartermaster  
General's Office, and Chief Quartermaster Cavalry Bureau.*

Brevet Major General M. C. MEIGS,

*Quartermaster General U. S. A., Washington, D. C.*

## APPENDIX.

Since the foregoing report was written, the following order, abolishing the cavalry bureau, has been received at this office:

[General Orders No. 83.]

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,

*Washington, October 4, 1866.*

The cavalry bureau of the War Department, established in General Orders No. 236, of July 28, 1863, is hereby abolished, and the records and papers appertaining thereto will be forwarded to the Adjutant General of the army.

By order of the Secretary of War:

E. D. TOWNSEND,  
*Assistant Adjutant General.*

A.—Report of *Gisboro' depot.*

CAVALRY HORSES.

On hand September 1, 1863.....		4,281
Received up to December 31, 1863.....		36,938
		<hr/> 41,219
Issued.....	22,204	
By.....	1,651	
Died.....	1,637	
	<hr/>	25,492
On hand January 1, 1864.....		15,721
Received by purchase, January 1, 1864 to June 30, 1866.....		5,326
Received from depots for issue.....		59,507
Received for recuperation.....		85,980
Received by transfer from artillery.....		4,120
		<hr/> 170,654
Issued to armies in field.....	96,006	
Issued to officers since June 30, 1865.....	1,574	
Issued for sale and sold at depot.....	48,721	
Died.....	24,321	
	<hr/>	170,622
On hand June 30, 1866.....		<hr/> <hr/> 32

ARTILLERY HORSES.

On hand September 1, 1864.....		.....
Received by purchase, September 1, 1864, to May 1, 1865.....		1,351
Received from depots for issue.....		10,927
Received for recuperation.....		345
		<hr/> 12,623
Issued to departments, September 1, 1864, to May 1, 1865.....	8,223	
Issued to cavalry.....	4,120	
Died.....	236	
	<hr/>	12,579
On hand June 30, 1866.....		<hr/> <hr/> 44

B.—Sales of animals from *Gisboro' depot.*

From January 1, 1864, to May 1, 1865.....	18,127	am't not repor'd
From January 1, 1864, to May 1, 1865.....	9,052	\$170,854 28
From May 1, 1865, to August 31, 1866.....	21,542	1,080,868 45
	<hr/> 48,721	<hr/> 1,251,722 73
	<hr/> <hr/>	

## C.—Statement of sales of horse carcasses at Gisboro', D. C.

Date.	No.	Amount.	Remarks.
1864.			
July .....	585	\$1,380 60	
August .....	809	1,909 24	
September .....	1,571	3,707 56	
October .....	2,285	5,392 60	
November .....	1,416	3,341 76	
December .....	1,388	3,275 68	
1865.			
January .....	2,429	5,732 44	
February .....	1,048	2,473 28	
	11,531	27,213 16	

## Statement of sales of manure at Gisboro' depot.

Date.	Cubic yards.	Amount.	Remarks.
1864.			
August .....	1,276½	\$382 93	This statement includes all the sales that have been reported.
September .....	1,437½	431 25	
October .....	3,834	1,150 20	
November .....	3,399	1,019 70	
December .....	4,073	1,221 90	
1865.			
February .....	2,873	861 90	
October .....	4,942	2,730 45	
November .....	2,168	1,197 82	
December .....	1,521	840 35	
	25,524	9,836 50	

## D.—Statement of sales of public property from Gisboro' depot, from July 1, 1865, to August 31, 1866, by Captain George T. Browning, assistant quartermaster.

Date.	Description of property.	Amount.	Total amount.
May 23, 1866..	Mill, boilers, engine, &c .....	\$10,545 00	\$10,545 00
July 1, 1865 to June 30, 1866	Quartermaster's stores, (miscellaneous) .....	21,590 24	21,590 24
July .....	Quartermaster's stores ".....do.....	746 00	
	Barracks and buildings .....	15,316 70	
	Water-works .....	10,794 54	
	Wharf .....	66 00	
			26,923 24
August .....	Quartermaster's stores, (miscellaneous) .....	12,157 50	
	Barracks and buildings .....	4,930 75	
	Fencing .....	125 00	
	Water-works .....	56 50	
	Wharves .....	557 00	
			17,826 75
			76,885 23

Total sales of property from Giesboro' depot, January 1, 1864, to August 31, 1866:

Animals .....	\$1,251,722 73
Carcasses.....	27,213 16
Manure.....	9,836 50
Quartermaster's stores, (miscellaneous).....	34,493 74
Barracks, buildings, &c. ....	42,391 49
Total.....	<u>1,365,657 62</u>

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No. 4.

SECOND DIVISION—CLOTHING AND EQUIPAGE.

QUARTERMASTER GENERAL'S OFFICE,  
Washington, D. C., October 13, 1866.

GENERAL: I have the honor to submit herewith, for your information as to the operations of the division of clothing and equipage during the fiscal year ending June 30, 1866, the following named statements:

1. Statement of uniform clothing and camp and garrison equipage not issued to the army, and remaining in depot June 30, 1865.
2. Statement of uniform clothing and camp and garrison equipage not issued to the army, and remaining in depot June 30, 1866.
3. Statement of damaged and unserviceable articles sold during the fiscal year.
4. Statement of expenditures on account of clothing and equipage at the principal depots, being principally in payment of purchases made during the previous fiscal year.
5. Statement of articles issued to the Bureau of Refugees, Freedmen and Abandoned Lands, so far as shown by the records of this office.
6. Statement showing the number of returns and accounts of officers examined and sent to the Treasury Department for final settlement.
7. Statement of claims received in the second division.

The purchase of supplies was immediately discontinued upon the suppression of the rebellion, and, as far as possible, deliveries on all existing contracts were ordered to cease or to be modified as to the quantity still remaining to be delivered, when it could be done without manifest injury to the contractors.

The expenditures mentioned in accompanying statement No. 4 were made principally in payment for supplies delivered before the close of the war, or on contracts that could not be entirely suspended, and for the storage and proper care of what remains on hand.

New purchases have not been made, as the quantity of stores on hand, with an occasional purchase of some articles of unusual size, is sufficient to meet all demands for the army at its present strength for some years to come.

These stores have been concentrated, as far as possible, in the principal depots, and there carefully have been, and are being, inspected and assorted; those found to be damaged and unfit for issue are sold under special authority from the War Department in each case; the remainder are carefully packed either in bales or boxes, lined with petroleum paper, in which condition, judging from past experience, they can be safely preserved until required for issue.

A small expenditure for the storage and proper care of this valuable property will necessarily be required, but no appropriations for the purchase of clothing and equipage will be needed for the next fiscal year.



During the past year a collection of samples of uniforms and equipage used by the army since the war of the Revolution has been made and added to the collection of standard samples preserved at the Schuylkill arsenal. Besides being a matter of general interest, it will be a source of information for the department, the want of which has been manifested during the past four or five years.

The number of clerks in the division has been, during the year, increased to two hundred and fifty, nearly one hundred having been employed at night, occupying the desks of the regular day clerks, thus economizing space and rent. With this increased force the office has been enabled to examine and refer for settlement all returns and accounts of officers of the volunteer service which have been accumulating during the war.

The number of clerks now employed is one hundred and twelve. A statement showing the work accomplished in the examination of returns and accounts of officers accompanies this report.

Respectfully submitted.

ALEXANDER J. PERRY,

*Brevet Brigadier General U. S. A., Chief Second Division.*

Brevet Major General M. C. MEIGS,

*Quartermaster General U. S. A., Washington, D. C.*

Statement of clothing reported on hand at the various clothing depots, June 30, 1865.

Articles of clothing.	New York	Philadelphia.	Cincinnati.	St. Louis	Washington.	Boston.	New Orleans.	Baltimore.	Fort Monroe.	Harrisburg.	Indianapolis.	Columbus.	Fort Leavenworth.	Quincy.	Pittsburg.	Detroit.
UNIFORM COATS.																
Engineers'.....	3,925	2,344	1,000				5,100						120			
Ordnance.....	386	1,784			34	8	3						67			2
Artillery.....	3,712	29,295	2,400	484	15,836	5,942	9,085	4,275	8,218				464			
Infantry.....	59,080	69,609	82,334	15,486	25,094	5,782	781	4,983	12,113	131	1,040	6,457	944	560	14,847	6,167
UNIFORM JACKETS.																
Cavalry.....	40,994	70,921	86,280	25,534	9,462	1,573	2,547	6,599	9,343	153	1,113	3,924	4,086		4,144	537
Artillery.....	1,862	16,116	44,165	2,653	27,578	1,074	5,619	3,584	10,930	42	191	1,266	773		765	638
Infantry.....									3,185		2,246	86		136		
Zouave.....			855				373	21								
Knit.....	2,238									51						
Invalid Corps.....	1,666	28,703	2,780	2,545	2,924	7,828	3,631	70	1,688	584		426		129		400
UNIFORM TROUSERS.																
Footmen.....	85,467	27,889	368,116	57,232	38,913	17,274	4,559	12,903	48,785	436	5,363	23,512	5,464	5,461	6,476	3,529
Horsemen.....	64,186	77,483	92,407	21,783	8,915	4,253		22,453	25,658	204	4,198	1,359	2,421	6	2,310	1,710
Zouave.....			653				214	16								
Overalls.....	6,410	790	5,335	9,790	15		4,932	265	2,694				20			
Drawers.....	154,363	322,023	262,241	73,639	30,754	23,910	3,466	40,294	47,590	543	2,462	20,859	7,301	5,360	11,523	4,027
Shirts, flannel.....	33,313	364,230	365,834	29,254	13,902	38,411		45,503	55,688	921	6,378	27,866	9,657	4,962	10,663	4,475
knit.....	143,470	54,200		85,083	84,768	7,444			13,227	22						
Zouave.....	17,644						40	3								
Greatcoats, footmen.....	103,252	122,744	146,111	46,456	34,607	11,430	32,736	7,282	9,141	392	5,750	14,500	12,189	149	5,176	3,332
horsemen.....	45,279	71,871	42,738	23,416	21,267	3,926	10,216	5,891	3,355	12	83	930	14,021	19	2,992	1,367
Straps, for greatcoats.....	131,090	120,259	225,584	83,660	141,855	10,223	60,416	22,064	23,521	3,535	1,142		50,797		10,959	6,506
Blankets, woollen.....	232,741	103,335	311,745	23,118	99,784	19,430	40,013	19,182	29,147	348	4,272	19,073	12,154	272	5,386	3,245
rubber.....	22,521		150,278	25,947	66,018	8,088	17,257	8,797	26,592	930	1,958	4,425	7,903			2,164
Ponchos.....			115,719	13,856	41,178	4,688	8,889	9,488		58		363			1,648	7
Talmas.....																
Sack coats, lined.....	200,384	138,224	242,661	44,315	123	12,368	5,286	18,747	23,076	489	5,876	10,327	20	363	1,143	3,300
unlined.....	168,819	179,415	155,596	44,107	13,296	2,279		12,083	8,669	475		10,000	38	116	6,038	
knit.....							21,070	48	752							

# REPORT OF THE SECRETARY OF WAR .

Bootees.....	2,677, 730	3,003, 930	3,119, 791	333, 114	235, 303	311, 238	336, 308	13, 963	76, 333	648	2, 725	16, 179	9, 017	307	7, 807	6, 609
Boots.....	83, 038	87, 310	83, 373	34, 744	13, 897	4, 153	45, 969	15, 627	44, 520	136	1, 141	1, 353	3, 152	52	2, 355	1, 194
Leggings.....	3, 241	8, 065	.....	.....	9, 446	.....	1, 178	380	5, 158	.....	.....	.....	.....	.....	.....	.....
Stockings.....	711, 085	269, 797	315, 797	114, 405	40, 626	32, 648	.....	53, 666	93, 332	1, 866	.....	2, 448	2, 469	973	12, 357	7, 079
Stocks, leather.....	154, 247	36, 097	28, 559	7, 832	18, 685	20, 086	5, 657	1, 506	26, 861	.....	5, 179	.....	22, 873	.....	3, 945	2, 296
Uniform hats, trimmed.....	10, 371	122, 967	42, 383	7, 037	42, 802	20, 397	943	8, 001	5, 982	6	722	739	1, 851	.....	2, 163	17
Uniform hats, untrimmed.....	.....	.....	.....	58, 201	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Uniform caps.....	154	744	.....	.....	.....	.....	1, 500	.....	1, 000	.....	.....	.....	.....	.....	.....	.....
Forage caps.....	195, 763	118, 892	304, 514	43, 933	35, 461	32, 387	.....	21, 573	17, 922	796	6, 828	17, 991	9, 348	58	9, 631	3, 272
Zouave caps.....	.....	3, 180	.....	.....	.....	.....	373	3	19	.....	.....	.....	.....	.....	.....	.....
Cap covers.....	.....	44, 085	34, 446	121	.....	2, 630	.....	1, 163	.....	.....	.....	15, 717	.....	.....	7, 550	.....
Stable frocks.....	62, 114	1, 780	34, 506	8, 096	3, 016	1, 133	2, 204	1, 359	1, 096	32	77	1, 955	4, 697	.....	3, 199	2, 140
Sashes.....	6, 523	1, 372	2, 456	1, 219	85	302	2, 051	185	686	213	164	174	58	.....	31	48
Gloves.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	200	.....	.....	.....	.....
Mittens.....	.....	.....	26, 824	.....	1, 877	.....	.....	.....	166	.....	.....	.....	10, 967	.....	.....	.....
Knapsacks.....	211, 579	86, 379	248, 353	49, 168	62, 085	23, 613	42, 465	11, 866	6, 756	4, 615	12, 190	7, 783	6, 772	.....	5, 516	3, 923
Haversacks.....	111, 744	82, 207	40, 101	58, 987	3, 336	16, 596	27, 056	9, 219	26, 705	4, 941	18, 477	6, 485	7, 643	.....	6, 641	3, 658
Canteens.....	225, 749	123, 433	194, 147	57, 689	25, 003	18, 544	19, 869	9, 923	29, 420	3, 713	20, 369	7, 384	2, 771	144	3, 236	3, 584
Brogans.....	57, 663	.....	11, 983	.....	.....	.....	9, 747	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leather gaiters.....	2, 084	.....	.....	.....	.....	Leather gaiters.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Water-proof blankets, horsemen.....	.....	115, 243	.....	.....	.....	Water-proof blankets, horsemen.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	455
footmen.....	.....	87, 021	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Statement of clothing reported on hand at the various clothing depots, June 30, 1865—Continued.*

Articles of clothing.	Louisville.	Davenport.	Chicago.	Newbern.	City Point.	St. Paul.	Calro.	Memphis.	Norfolk.	Prairie du Chien.	Keokuk.	Madison.	Augusta.	Wheeling.	Hilton Head.	Trenton.	Total on hand.	
UNIFORM COATS.																		
Engineers.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 129	.....	.....	13, 618
Ordnance.....	.....	13	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2, 301
Artillery.....	153	.....	2, 365	165	.....	.....	.....	2, 066	75	.....	.....	74	.....	.....	1, 025	.....	.....	85, 634
Infantry.....	7, 652	1, 646	1, 704	2, 375	69	7, 742	.....	7, 822	585	319	1, 009	7, 280	2, 251	1, 711	925	12, 054	360, 552	
UNIFORM JACKETS.																		
Cavalry.....	4, 389	213	2, 450	4, 770	12	699	493	9, 484	111	.....	200	1, 835	530	1, 885	2, 803	.....	297, 089	
Artillery.....	4, 159	.....	1, 743	2, 441	126	80	291	459	188	.....	.....	1, 496	282	500	2, 065	4	131, 090	
Infantry.....	1, 373	.....	.....	.....	.....	.....	.....	.....	284	.....	.....	.....	.....	356	.....	.....	7, 666	
Zouave.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1, 252	
Knit.....	8, 631	.....	3, 985	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	24	.....	14, 929	
Invalid Corps.....	.....	.....	4, 911	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	500	52, 785	
UNIFORM TROWERS.																		
Footmen .....	29, 552	1, 539	9, 259	11, 757	522	1, 229	1	18, 595	17	152	1, 246	20, 323	540	3, 456	6, 117	8, 068	823, 763	
Horsemen .....	8, 909	275	2, 272	.....	.....	700	227	5, 384	181	89	300	526	314	951	9, 943	2, 089	361, 509	
Zouave.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	79	.....	962	
Overalls.....	898	.....	126	.....	.....	.....	.....	12	.....	.....	.....	.....	.....	.....	2, 323	.....	33, 610	
Drawers.....	84, 836	2, 032	12, 105	426	.....	1, 400	1, 249	23, 589	378	187	1, 286	9, 678	972	3, 354	9, 205	5, 492	1, 166, 541	
Shirts, flannel.....	25, 452	9, 287	19, 687	6, 130	.....	1, 708	506	18, 729	290	27	1, 311	10, 547	1, 115	3, 043	11, 042	10, 541	1, 130, 482	
knit.....	.....	.....	.....	.....	79	.....	465	3, 219	61	.....	.....	.....	.....	18	2, 069	.....	394, 125	
Zouave.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17, 687	
Greatcoats, footmen.....	51, 716	1, 008	8, 559	2, 558	40	3, 639	.....	13, 142	39	55	69	6, 428	2, 856	2, 604	2, 535	1, 069	651, 564	
horwemen .....	8, 269	.....	2, 474	2, 717	106	1, 387	40	7, 488	268	.....	209	2, 207	444	1, 827	2, 531	820	278, 161	
Straps, for great coats.....	10, 286	1, 749	14, 341	2, 691	819	65	.....	6	1, 297	.....	921	13, 722	1, 175	577	6, 918	3, 055	949, 233	
Blankets, woollen.....	5, 789	7, 336	11, 213	8, 704	375	626	98	26, 050	4, 165	215	475	9, 254	548	5, 342	4, 603	1, 041	1, 009, 106	
rubber.....	731	.....	8, 129	9, 362	310	36	.....	.....	579	.....	.....	7, 855	526	1, 138	13, 431	.....	384, 975	
Ponchos.....	2, 506	.....	25	7, 505	15	1, 042	66	.....	.....	.....	.....	1, 739	103	510	1, 500	.....	210, 905	
Talinas.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	
Sack coats, lined.....	10, 640	1, 837	7, 202	3, 270	.....	1, 066	517	.....	41	404	120	8, 098	522	117	6, 830	4, 108	751, 544	
unlined.....	42	.....	4, 950	2, 843	1, 421	582	666	15, 831	274	.....	99	185	.....	1, 233	7, 588	.....	636, 645	
knit.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21, 870	

Footstools.....	53,714	8,649	12,603	27,617	63	13,880	279	47,624	2,706	282	1,800	11,525	5,475	3,626	1,479	4,877	1,500,079
Boots.....	3,400	319	2,335	5,849	167	540	456	12,677	454	100	200	205	458	1,616	7,351	2,830	435,033
Leggings.....																	24,461
Stockings.....	22,877	2,496	23,071	12,324		2,400	1,133	18,740	613	359	1,545	10,135	3,626	5,751	33,114	5,963	1,803,719
Stocks, leather.....	9,010	914	9,510	2,374	97	1,218		3,254	102		1,907	7,558	739	4,442	13,768	7,486	386,952
Uniform hats, trimmed.....	286	1,974	12,621	13,771		2,451	198	28,173	87		1,153	272		1,591	5,592	5,044	339,394
untrimmed.....																	58,201
Uniform caps.....																	33,096
Forage caps.....	6,506	4,171	12,690	9,109	32	6,734		248	110	200	2,219	10,130	1,179	2	13,079	5,471	890,249
Zouave caps.....																	3,575
Cap covers.....	31,540			14,975		1,000							2,810	3,877	64	5,000	164,987
Stable stocks.....	79		2,994	127	20	1,400			156				577	133	2,140		138,070
Sashes.....		116	115	208	14	18		3,040			3	65	8	89	210	43	16,063
Gloves.....																	200
Mittens.....																	47,313
Knapsacks.....	14,571	13,298	17,484	8,806	21	1,865	175	2,783	65		899	5,247	2,684	1,389	11,342	4,886	868,578
Haversacks.....	13,945	11,320	20,872	9,647	462	1,899	459	19,620	84	200	188	5,285	2,860	1,488	5,464	5,032	522,621
Canteens.....	7,074	8,075	16,463	27,142	10	2,000	260	17,516	192	200	651	6,190	2,890	2,406	4,806	4,350	845,209
Brogans.....																	79,393
Leather gaiters.....																	2,064
Water-proof blankets, horsemen.....								6,500									122,198
footmen.....								7,359									94,380

Respectfully submitted to the Quartermaster General:

ALEXANDER J. PERRY,  
*Brevet Brigadier General U. S. A., Chief Second Division.*

QUARTERMASTER GENERAL'S OFFICE, SECOND DIVISION, October 13, 1866.

Statement of camp and garrison equipage, reported on hand at the various clothing depots June 30, 1865.

Articles of equipage.	New York.	Philadelphia.	Cincinnati.	St. Louis.	Washington.	Boston.	New Orleans.	Baltimore.	Fortress Monroe.	Harrisburg.	Indianapolis.	Columbus.	Fort Leavenworth.	Quincy.	Pittsburg.	Detroit.
Hospital tents.....	490	813	1,875	850	625	13	52	387	170	35	43	16	227	.....	7	2
Wall tents.....	4,295	2,537	3,716	775	4	.....	580	220	294	179	353	876	288	.....	19	12
Sibley tents.....	.....	6	2	30	89	.....	3	26	.....	2	1	.....	75	.....	.....	.....
Common tents.....	20,799	3,677	325	1,988	7,659	.....	470	4,166	2,451	2,148	496	367	1,714	.....	.....	.....
Shelter tents.....	80,653	152,041	124,241	62,206	15,794	2,675	30,187	10,800	11,104	2,843	11,205	.....	25,278	.....	6,633	.....
Frémont and Bell tents.....	.....	39	45	4	.....	.....	.....	.....	.....	.....	88	.....	6	.....	.....	.....
Tent stoves.....	3,074	2,016	45	893	955	.....	.....	254	860	329	375	.....	529	.....	.....	42
Bed sacks, single.....	62,642	1,363	.....	12,975	3,467	1,661	8,486	714	1,124	202	.....	22	15,413	.....	.....	4,233
Bed sacks, double.....	3,006	26,692	.....	4,043	4,566	1,646	2,338	185	1,084	70	659	10	1,032	200	40	902
Mosquito bars.....	29,575	9,511	.....	10,472	27	.....	15,522	.....	109	.....	.....	.....	68	.....	.....	.....
Regimental colors.....	291	109	170	73	6	10	17	17	.....	6	2	2	9	.....	1	2
Camp colors.....	3,426	448	1,502	132	546	64	238	31	101	80	.....	3	44	.....	18	52
National colors.....	204	87	126	46	7	3	10	11	.....	6	5	.....	6	.....	10	2
Standards.....	449	108	536	40	23	.....	.....	24	.....	4	.....	.....	.....	.....	.....	.....
Storm flags.....	74	136	75	15	66	17	39	10	57	4	.....	3	30	2	3	.....
Garrison flags.....	52	99	36	28	62	3	13	9	58	5	1	2	21	.....	.....	4
Recruiting flags.....	1,085	302	282	38	18	50	106	15	17	6	.....	2	31	.....	.....	16
Guldons.....	445	231	221	418	5	25	386	57	28	18	4	.....	8	.....	2	.....
Pickaxes.....	23,539	7,209	14,145	10,960	18,596	2,586	1,130	1,199	2,542	65	2,935	1,749	2,888	.....	661	846
Axes.....	17,041	15,216	8,946	4,208	21,965	1,853	65	2,135	1,948	162	556	644	3,257	.....	254	716
Spades.....	21,972	8,786	18,254	12,047	17,043	3,415	.....	1,067	1,558	175	2,632	828	2,871	16	316	601
Shovels.....	354	8,594	12,740	8,804	7,105	462	298	1,101	2,209	259	112	161	1,490	.....	.....	.....
Hatchets.....	31,419	13,312	10,452	9,806	13,925	1,203	2,997	2,025	5,584	489	644	1,340	2,747	11	843	669
Mess pans.....	39,518	80,742	76,163	24,512	22,810	4,403	18,649	5,069	12,826	500	7,960	1,101	3,541	10	5,109	1,270
Iron pots.....	371	719	.....	16	107	.....	225	.....	57	.....	.....	.....	25	.....	.....	.....
Camp kettles.....	17,250	23,254	26,521	4,896	611	125	2,462	1,327	2,452	121	3,097	.....	1,859	.....	2,081	501
Bugles.....	345	67	441	1,336	302	369	55	237	58	50	32	99	91	.....	7	11
Trumpets.....	492	720	839	748	57	17	39	175	47	19	.....	10	199	.....	9	.....
Drums.....	1,315	1,688	651	801	42	138	52	143	90	51	107	128	94	.....	17	15
Fifes.....	2,975	2,097	1,165	1,634	633	382	339	243	713	34	355	147	29	.....	20	42
General hospital flags.....	47	48	128	.....	41	.....	69	27	4	3	.....	4	18	.....	4	.....
Post and field flags.....	52	209	1	208	145	.....	190	82	13	.....	.....	8	30	.....	.....	.....
Ambulance flags.....	.....	833	1,628	.....	150	.....	.....	76	.....	.....	.....	.....	200	.....	.....	.....
BOOKS.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Company Order.....	1,911	953	2,650	465	203	67	629	163	333	.....	75	41	134	.....	38	30



[illegible]

Statement of camp and garrison equipage, reported on hand at the various clothing depots, June 30, 1865—Continued.

Articles of equipage.	Louisville.	Davenport.	Chicago.	Newbern.	City Point.	St. Paul.	Cairo.	Memphis.	Norfolk.	Prairie du Chien.	Keokuk.	Madison.	Augusta.	Wheeling.	Hilton Head.	Trenton.	Total on hand.
Hospital tents	240		40	186	10		7		6			25			10	2	6,121
Wall tents		6	608	23	26		1	413	131			32	8	23	222	31	15,672
Sibley tents			5												1		240
Common tents	306	5	253	387	25		461	1,653	535				226	1,235	2,374	185	53,902
Shelter tents	9,902	362	5,558	9,225	262	100		218,931	310			2,762	2,059	310	4,897	856	791,254
Frémont and Bell tents	225							1									363
Tent stoves	25		571	438				45				20		1,066	2		11,539
Bed sacks, single	724	192	1,003	1,032		370		29	20		150	27	492	200	274		116,815
Bed sacks, double		214	1,026			657	76	31				937	30	500		278	50,222
Mosquito bars							102	86	257						545		66,274
Regimental colors	6	13	28		6		2	7				7	1			4	789
Camp colors	8	74	295		34	4		47				32	9	57	13	12	7,270
National colors	16	16	27		7		2	5				7	2			4	609
Standards		2	4		5			32				2			5		1,224
Storm flags	18		129	10	8	1	2	10	6			2			21	5	748
Garrison flags		2	74	4	8	3	2	1	2			1	1		6		497
Recruiting flags	19		86	2				9				3	19				2,103
Guidons	20	13	19	33				66				2	19		19		2,039
Pickaxes	3,071		1,295	1,605	45	428	5	1,353	93	12	190	1,233	285	1,267	979	310	103,228
Axes		1,947	2,607	1,980	88	167	205	1,978	134	7	255	1,402	96	250	170	296	90,548
Spades	3,248	1,911	1,709	1,751	17	346	210	1,223	398	7	98	1,405	123	500		605	105,132
Shovels			7	826	250		41	2,499				61		18			47,391
Hatchets	543	1,968	2,874	2,205	20	515	91	2,284	177	24	188	1,191	178	498	716	309	111,247
Mess pans	16,232	3,290	5,370	8,683	120	884	302	4,886	732		229	3,682	1,440	2,849	8,925	2,279	364,086
Iron pots			80	78													1,678
Camp kettles	162	1,058	1,906	326	177	167	60	3,652	370		71	1,161	693	327	8,624	1,106	106,417
Bugles	34	50	86	40	23		5	33	9		7		18	2	77	9	3,893
Trumpets		23	70	150	9	20	4	70						3	47	2	3,869
Drums	16	72	85		8	43	7	124	23		6	63	22	20	6	30	5,865
Fifes			110	234	86	3	17	154			4	102	21	77	80	51	11,747
General hospital flags	22			74				16				4		2			511
Post and field flags								7				6					951
Ambulance flags																	2,887
BOOKS.											10	30	30	53	18	37	8,838

[illegible]

Respectfully submitted to the Quartermaster General United States army :

**ALEX. J. PERRY,**  
*Brevet Brigadier General U. S. A., Chief Second Division.*

QUARTERMASTER GENERAL'S OFFICE, SECOND DIVISION, October 13, 1886.

Statement of clothing reported on hand at the various clothing depots June 30, 1866.

Articles of clothing.	New York.	Philadelphia.	Cincinnati.	Jeffersonville.	Washington.	St. Louis.	Nashville.	Boston.	New Orleans.	Baltimore.	Fort Monroe, Va.
<b>UNIFORM COATS.</b>											
Engineers .....	3,593	2,344	1,001	211	1	368	354	.....	4,525	.....	.....
Ordnance .....	75	1,276	1	.....	17	.....	.....	39	.....	.....	.....
Artillery .....	13,223	32,539	2,072	464	18,232	563	7	5,145	10,019	737	9,114
Infantry .....	63,732	76,974	106,371	48,496	41,945	41,241	5,105	6,134	13,912	1,266	11,695
<b>UNIFORM JACKETS.</b>											
Cavalry .....	46,423	72,471	98,417	54,731	19,579	60,714	1,984	2,049	24,646	303	9,626
Artillery .....	5,931	20,035	53,517	26,470	36,551	8,835	589	886	7,894	871	11,506
Infantry .....	.....	.....	754	1,709	182	.....	32	.....	.....	.....	3,478
Cotton .....	.....	.....	.....	.....	.....	.....	.....	.....	241	.....	.....
Knit .....	.....	.....	.....	8,700	106	.....	6	.....	.....	.....	.....
Invalid corps .....	4,014	33,733	8,764	649	5,016	8,912	276	2,187	3,674	181	1,812
<b>UNIFORM TROUSERS.</b>											
Footmen .....	61,096	294,367	416,242	66,927	30,813	71,968	10,274	14,460	8,401	1,226	27,745
Horsemen .....	33,102	62,778	117,908	21,870	19,383	60,207	1,899	4,078	14,629	1,754	20,702
Overalls .....	5,692	650	5,337	1,310	.....	9,356	284	.....	2,927	99	2,660
Drawers, flannel and knit .....	379,493	364,754	310,829	274,766	24,863	130,682	21,533	21,047	22,342	4,514	27,565
Shirts, flannel .....	145,665	374,840	416,320	118,680	11,316	97,555	17,019	40,376	10,176	218	30,036
knit .....	91,365	31,377	.....	.....	100,490	86,420	.....	5,847	17,580	.....	37,800
Greatcoats, footmen .....	175,892	124,956	176,182	121,375	49,269	94,077	3,947	9,994	12,104	1,367	6,068
horsesmen .....	52,420	62,407	85,419	41,408	26,396	47,705	1,071	4,185	7,989	860	3,115

Blankets, woollen.....	32,212	2,040	431	1,283	37	3,454	5,872	692	10,280	1,103,904
rubber and painted.....	26,051	4	100	1,779	35	255	6,407	1,130	.....	559,758
Ponchos, rubber and painted.....	1,195	1,648	19	2,367	92	216	7,638	.....	.....	371,575
Sack coats, lined.....	25,756	704	527	151	161	2,260	2,897	932	7,759	1,015,959
unlined.....	402	5,648	.....	4,808	.....	186	2,701	434	.....	758,823
knit.....	5	.....	.....	.....	.....	.....	.....	.....	.....	1,750
Bootees, sewed.....	6,693	7,699	788	2,269	29	4,011	4,632	1,758	3,785	1,757,378
Boots, sewed.....	19,897	2,342	.....	3,835	429	173	2,089	780	1,636	381,742
Bootees, pegged.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	134,927
Boots, pegged.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45,484
Leggings and gaiters.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12,562
Stockings.....	12,164	11,436	73	6,161	661	12,547	10,631	1,629	1,200	1,835,238
Stocks, leather.....	19,978	6,081	.....	2,130	1,244	17,045	12	.....	16,213	452,601
Uniform hats, trimmed.....	27,355	2,096	120	3,503	411	11,042	6,926	894	2,904	299,746
untrimmed.....	.....	.....	.....	.....	326	.....	.....	.....	.....	233,482
Uniform caps.....	180	.....	10	.....	.....	.....	.....	.....	.....	2,886
Forage caps.....	29,722	8,809	375	1,555	.....	568	2,728	1,109	3,775	1,020,511
Cap covers.....	58	7,550	.....	8	.....	77	15	2	10,200	345,719
Stable frocks.....	9,797	3,249	.....	.....	282	320	1,218	.....	918	109,861
Sashes.....	315	30	.....	600	26	179	516	24	94	17,050
Gloves.....	2	.....	.....	.....	.....	.....	.....	.....	.....	2
Mittens.....	8,889	12	.....	374	.....	.....	.....	.....	.....	54,444
Knapsacks, painted, rubber, &c.....	16,729	5,440	.....	1,080	68	9,511	4,150	666	598	1,027,618
Haversacks, painted, rubber, &c.....	20,734	6,865	94	9,316	283	7,286	4,339	1,075	4,413	611,176
Canteens.....	14,366	3,836	.....	2,325	.....	6,325	3,114	918	5,159	992,356

Respectfully submitted to the Quartermaster General of the United States army:

ALEX. J. PERRY,  
Brevet Brigadier General U.S. A., Chief Second Division.

QUARTERMASTER GENERAL'S OFFICE, SECOND DIVISION, October 13, 1866.

## Statement of clothing, &amp;c.—Continued.

Articles of clothing.	Fort Leavenworth.	Pittsburg.	Newbern, N. C.	Memphis.	Sioux City.	Hilton Head, S. C.	Little Rock.	Chattanooga.	San Francisco.	Total on hand.
<b>UNIFORM COATS.</b>										
Engineers .....	120	.....	.....	.....	.....	.....	.....	.....	.....	12,517
Ordnance .....	36	.....	.....	.....	.....	20	.....	.....	6	1,470
Artillery .....	528	.....	.....	1,084	.....	.....	.....	.....	.....	93,727
Infantry .....	6,567	14,567	303	2,300	.....	592	3,028	953	7,788	452,969
<b>UNIFORM JACKETS.</b>										
Cavalry .....	21,502	3,969	13	1,553	.....	.....	2,527	210	484	421,201
Artillery .....	1,972	683	.....	1,236	.....	.....	1,642	111	13	178,742
Infantry .....	119	1	.....	.....	1,282	.....	.....	.....	.....	7,557
Cotton .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	241
Knit .....	.....	.....	.....	.....	.....	6	.....	.....	.....	8,818
Invalid Corps .....	.....	140	.....	.....	.....	.....	.....	.....	.....	69,358
<b>UNIFORM TROUSERS.</b>										
Footmen .....	2,014	5,495	89	2,985	360	76	3,418	876	3,501	1,022,333
Horsemen .....	20,717	1,891	.....	2,339	419	537	4,159	99	6,096	394,567
Overalls .....	101	.....	.....	12	.....	321	119	.....	4,314	33,182
Drawers, flannel and knit .....	44,204	10,990	93	3,269	210	4,000	18,193	666	7,365	1,671,378
Shirts, flannel .....	8,578	9,597	98	5,010	233	3,729	18,883	2,208	15,937	1,326,474
knit .....	35,518	.....	.....	1,999	.....	3,998	5,390	.....	.....	417,784
Greatcoats, footmen .....	9,494	4,972	49	.....	5	4,658	2,837	784	2,198	800,228
horsemen .....	19,817	2,718	.....	91	600	91	3,664	264	1,284	361,570
Straps for greatcoats .....	45,272	10,871	.....	403	2,201	9,962	10,028	33	11,930	982,984



Blankets, woollen.....	39,919	2,040	431	1,953	37	3,454	5,872	682	10,249	1,103,904
Blankets, rubber and painted.....	26,051	4	100	1,779	35	255	6,407	1,130	.....	559,758
Ponchos, rubber and painted.....	1,105	1,648	19	2,367	92	216	7,638	.....	.....	371,675
Back coats, lined.....	25,756	704	527	151	161	2,200	2,897	932	7,759	1,015,959
Back coats, unlined.....	402	5,648	.....	4,808	.....	186	2,701	434	.....	758,823
Bootees, sewed.....	5	.....	.....	.....	.....	.....	.....	.....	.....	1,750
Boots, sewed.....	6,693	7,699	788	2,269	29	4,011	4,632	1,758	3,785	1,757,378
Bootees, pegged.....	19,897	2,342	.....	3,835	429	173	2,089	780	1,636	381,742
Boots, pegged.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	134,927
Leggings and gaiters.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	45,484
Stockings.....	12,164	11,436	73	6,161	661	4	.....	.....	1,200	12,562
Stocks, leather.....	19,978	6,081	.....	2,130	1,244	12,547	10,631	1,629	16,213	1,835,238
Uniform hats, trimmed.....	27,355	2,096	120	3,503	411	17,045	12	.....	10,718	452,601
Uniform hats, untrimmed.....	.....	.....	.....	.....	326	11,042	6,926	894	2,904	299,746
Uniform caps.....	180	.....	10	.....	.....	.....	.....	.....	.....	233,482
Forage caps.....	29,722	8,809	375	1,555	.....	568	2,728	1,109	3,775	2,886
Cap covers.....	58	7,550	.....	8	.....	77	15	2	10,200	1,020,511
Stable frocks.....	9,797	3,249	.....	.....	282	320	1,218	.....	918	345,719
Sashes.....	315	30	.....	600	26	179	516	24	94	109,861
Gloves.....	2	.....	.....	.....	.....	.....	.....	.....	.....	17,050
Mittens.....	8,889	12	.....	374	.....	.....	.....	.....	.....	2
Knapsacks, painted, rubber, &c.....	16,729	5,440	.....	1,080	68	9,511	4,150	666	.....	54,444
Haversacks, painted, rubber, &c.....	20,734	6,865	94	9,316	283	7,286	4,339	1,075	4,413	1,027,618
Canteens.....	14,366	3,836	.....	2,325	.....	6,325	3,114	918	5,159	611,176
										992,356

Respectfully submitted to the Quartermaster General of the United States army:

ALEX. J. PERRY,  
Brevet Brigadier General U. S. A., Chief Second Division.

QUARTERMASTER GENERAL'S OFFICE, SECOND DIVISION, October 13, 1866.

## Statement of camp and garrison equipage, &amp;c.—Continued.

Articles of equipage.	Fort Leavenworth.	Pittsburg.	Newbern.	Memphis.	Sioux City.	Hilton Head.	Little Rock.	Chattanooga.	San Francisco.	Total on hand.
Hospital tents .....	195	7	12	57	.....	61	139	.....	38	8,524
Wall tents .....	297	19	179	319	30	22	162	60	26	14,713
Sibley tents .....	86	.....	15	.....	2	.....	.....	.....	1	245
Common tents .....	714	.....	101	588	1	2,230	.....	.....	2,939	43,054
Shelter tents .....	23,677	6,633	455	5,011	71	3,860	2,791	738	1,513	740,182
Bell, Frémont, &c. ....	6	7	.....	.....	.....	.....	.....	.....	269	1,228
Tent stoves .....	426	.....	19	.....	7	2	.....	24	5	7,570
Bed sacks, single .....	12,871	117	.....	1,148	53	3,006	4,231	.....	7,357	116,346
Bed sacks, double .....	5,583	19	.....	13	92	.....	1,286	45	244	51,904
Mosquito bars, single and double .....	406	.....	.....	.....	.....	10,042	.....	.....	2,539	53,471
Regimental colors .....	9	1	.....	10	.....	10	28	5	6	1,000
Camp colors .....	34	18	.....	57	.....	9	39	.....	279	7,834
National colors .....	7	10	.....	7	.....	10	4	3	6	750
Standards .....	.....	.....	.....	33	.....	5	16	.....	.....	972
Storm flags .....	56	2	1	10	1	1	8	.....	98	551
Garrison flags .....	32	.....	.....	2	.....	3	4	.....	71	451
Recruiting flags .....	37	.....	4	9	.....	.....	2	3	98	2,094
Guidons .....	404	2	.....	56	4	25	261	.....	90	2,585
Pickaxes .....	2,684	661	.....	1,312	111	1,563	1,166	161	692	84,398
Axes .....	6,721	253	9	1,473	101	1,268	5,328	197	232	105,506
Spades .....	3,172	315	2	1,152	10	2,155	1,967	127	378	91,808
Shovels .....	2,028	.....	.....	2,503	82	1,128	375	.....	1	53,892
Hatchets .....	2,331	842	.....	2,098	200	638	6,062	179	302	137,602
Mess pans .....	15,161	5,481	9	4,173	46	9,493	3,717	386	1,267	489,878
Iron pots .....	3	.....	43	.....	.....	.....	8	.....	226	1,798
Camp kettles .....	3,985	2,072	.....	1,228	47	8,747	2,183	310	565	156,539
Bugles .....	410	7	.....	20	5	96	256	11	62	4,302
Trumpets .....	212	9	.....	18	10	45	390	9	91	4,467

Drums .....	79	17	4	92	.....	36	113	28	144	5,991
Fife .....	69	20	1	172	.....	150	243	20	178	13,955
Flags, ambulance and guldron .....	200	.....	.....	.....	.....	.....	.....	.....	.....	4,808
Flags, general hospital .....	18	4	.....	16	.....	.....	.....	.....	.....	572
Flags, post and field .....	30	.....	.....	7	.....	.....	.....	.....	.....	927
Flags, signal .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
Flags, designating .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	157
BOOKS.										
Company Order .....	210	20	27	487	.....	1	120	7	163	11,709
Company Clothing Account .....	184	38	29	418	.....	.....	45	2	156	11,168
Company Descriptive .....	253	20	77	434	.....	.....	86	13	187	11,805
Company Morning Report .....	179	30	29	526	.....	4	121	9	216	13,220
Post Order .....	86	.....	14	.....	.....	.....	128	.....	226	6,301
Post Morning Report .....	76	.....	22	.....	.....	.....	.....	.....	183	6,910
Post Letter .....	101	1	13	.....	.....	.....	.....	.....	207	6,625
Post Guard .....	80	.....	14	.....	.....	.....	64	.....	122	4,481
Regimental General Order .....	50	4	21	106	.....	1	25	.....	.....	2,335
Regimental Letter .....	66	3	16	75	.....	1	69	.....	9	1,966
Regimental Descriptive .....	78	4	5	177	.....	.....	70	3	9	2,440
Regimental Index .....	84	3	17	113	.....	.....	74	.....	14	2,533
Regimental Order .....	73	4	11	45	.....	.....	41	.....	14	2,027
Target Practice .....	51	.....	3	.....	.....	.....	.....	.....	124	2,806
Consolidated Morning Report .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	7
Inspection Report .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41
Brigade Letter .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	175
Brigade Letters Rec'd. ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	164
Brigade Order .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	134
Brigade Mem. and Endorsement .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	104
Brigade General Order .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13
Brigade Field Order .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	50

Respectfully submitted to the Quartermaster General of the United States army:  
ALEX. J. PERRY, Brevet Brig. General U. S. Army, Chief Second Division.  
QUARTERMASTER GENERAL'S OFFICE, Second Division, October 13, 1866.

*Statement of damaged and irregular clothing and equipage sold at public auction during the fiscal year ending June 30, 1866.*

51, 647 axes.	3, 310 cannons, crossed.
59, 656 axes, pick.	69, 147 canteens and straps.
12, 573 bars, mosquito.	2 cases, color.
30 bags, whip.	373 cases, drum.
41 bands and tassels.	28 cases, guidon.
37, 859 bed sacks.	158 cases, pillow.
8 bedsteads.	738 cases, knapsack.
34 belts, color.	18, 405 caps, forage.
844 belts, sword.	1, 780 caps, Zouave.
10 belts and sockets, color.	143 caps, Sibley tent.
22 belts and slings.	2, 049 caps, assorted.
4 bidons.	270 carriages, drum-stick.
513 blankets, painted.	57 castles, hat.
41, 303 blankets, wool.	163 cans, oil.
6, 819 blankets, rubber.	2 caps and hoods.
40 blankets, horse.	21 cascalets.
51 blankets, hospital.	600 canvas, pounds of.
1, 763 boots.	44 cans, mess.
4, 416 bootees.	$\frac{1}{2}$ caduceus, pair of.
168 boards, button.	$8\frac{3}{4}$ cashmere, yards of.
16 boilers, coffee.	69 chevrons, corporals'.
37 books, company clothing.	326 chevrons, sergeants'.
22 books, company descriptive.	1, 645 chevrons, assorted.
21 books, company morning report.	1 chest, mess.
38 books, company order.	783 chains, Sibley tent.
1 book, consol. morning report.	172 cloth, oil, yards of.
4 books, post-guard report.	1 cloak, Zouave.
2 books, post letter.	28, 360 cord, tent, feet of.
10 books, post morning report.	14 cord, bunches of.
16 books, post order.	1, 346 cord, yellow, yards of.
3 books, regimental descriptive.	4 cords, bugle.
1 book, regimental general orders.	434 cords, drum.
3 books, regimental index.	21 cords, hat.
3 books, regimental letter.	21 cords, artillery.
5 books, regimental order.	105 cords, infantry.
46 books, assorted.	414 cords, assorted.
7 bowls, wash.	256 cords and tassels, bugle.
7, 258 bowls, tin.	84 cords and tassels, trumpet.
1, 829 boxes, packing.	1, 834 cords and tassels, hat.
1, 744 boxes, assorted.	48 cords and tassels, assorted.
21 bonnets, tent, pounds of.	16 comforts, bed.
159 $\frac{1}{2}$ braids, yards of.	19 cots.
959 bugles.	11, 221 covers, cap.
9, 074 bugles, hat and cap.	62 colors, camp.
18 bugles and trumpets.	8 colors, designating.
1 buttons, assorted, lot of.	19 colors, national.
1 bugle cords and trumpets, lot of.	9 colors, regimental.
14 buttons and slides, pairs of.	1, 009 coats, uniform, artillery.
610 braces, pairs of.	40, 160 coats, uniform, infantry.
	11 coats, uniform, ordnance.
	8, 988 coats, irregular.
	5, 246 coats, great, mounted.

87, 307 coats, great, foot.	698 hats, uniform.
17, 372 coats, great, irregular.	437 heads, drum, batter.
83 coats, engineer.	415 heads, drum, snares.
38, 753 coats, flannel sack.	597 heads, drum, assorted.
1, 448 cravats.	863 hoops, iron, pounds of.
1 crossed cannon, eagles, &c., lot of.	991 jackets, artillery.
2, 024 cups, tin.	14, 205 jackets, cavalry.
82, 448 cuttings, assorted, pounds of.	23, 002 jackets, knit.
10 cushions, Cascalet's.	3, 028 jackets, infantry.
8 desks.	105 jackets, Veteran Reserve Corps.
3 dippers, tin.	4, 163 jackets, Zouave.
2 dies, steel.	4 jackets, engineer.
4, 836 drawers, pairs of.	7 jackets, marine.
2, 180 drums.	5, 262 jackets, assorted.
515½ drilling, yards of.	34, 944 kettles, camp.
1 drawers, shirts, &c., lot of.	2 kettles, iron.
1 drum heads, slings, &c., lot of.	128, 491 knapsacks.
4, 523 duck, pounds of.	1, 337 knives, assorted.
3, 198 eagles.	101 knives and forks.
11 elbows, stove-pipe.	14½ lace, silk, yards of.
1, 070 epaulettes.	2, 752 lace, worsted, yards of.
2, 303 feathers.	20 ladles.
598 fifes.	889 letters and numbers.
4 flags, ambulance.	15, 610 letters, hat and cap.
1 flag, boat.	12, 670 leggings, pairs of.
1 flag, brigade.	1 leggings and bootees, lot of.
3 flags, corps.	299 linings, yards of.
1 flags, division.	32½ linen, yards of.
37 flags, garrison.	144 lids, assorted.
38 flags, hospital.	816 mallets.
2 flags, headquarters.	31 mess sets.
2 flags, post.	34, 927 mittens, pairs of.
50 flags, recruiting.	1 mill, coffee.
4 flags, signal.	20 musical instruments.
107 flags, storm.	238 mouth-pieces, bugle.
7 flags, assorted.	60 mouth-pieces, trumpet.
5, 689 flies, hospital tent.	23, 523 numbers.
6, 668 flies, wall tent.	7, 232 overalls, pairs of.
124 flies, assorted.	63 ovens.
1, 025 forks.	1 old bedstead, stoves, &c., lot of.
274 frogs, brass.	48, 931 pans, mess.
7, 039 frocks, stable.	496 pans, assorted.
284 gaiters, pairs of.	7 paulins.
142 gloves, pairs of.	1, 104 pepper and salt, boxes of.
91 guidons.	25, 802 pins, tent, large, number of.
34 gridirons.	2, 872 pins, tent, large, sets of.
208 halliards.	719 pins, tent, small, sets of.
66, 271 handles, axe.	58, 053 pins, tent, small, number of.
59, 158 handles, axe, pick.	379 pipe, stove, sets of.
6, 050 handles, hatchet.	1, 007 pipe, stove, joints of.
99, 649 haversacks.	1, 306 pipe, stove, pounds of.
1, 908 havelocks.	1 pipe, stove, lot of.
7, 577 hatchets.	25 pipe, stove, Sibley, sets of.
1, 447 handkerchiefs.	354 pipe, stove, Sibley, joints of.
3, 250 hats, assorted.	2, 966 plates, tin.
	707. plumes.

2, 799 ponchos.	996 slings, drum.
1, 278 poles, hospital tent, sets of.	100 slings, hatchet.
447 poles, hospital tent, number of.	2 slings, spade.
3, 996 poles, wall tent, sets of.	980 slings, gun.
3, 138 poles, wall tent, number of.	1, 937 slings, knapsack.
1, 256 poles, Sibley tent, sets of.	200 slats, tent.
8, 208 poles, common tent, sets of.	549 snares, drum.
7, 255 poles, common tent, number of.	76, 413 spades.
2, 951 poles, shelter tent, sets of.	1, 615 spoons.
4, 001 poles, shelter tent, number of.	478 steps, Sibley.
5, 903 poles, assorted tent, sets of.	24 strings, cap.
3, 737 poles, assorted tent, number of.	466 straps, canteen.
2 poles, flag.	62, 344 straps, greatcoat.
8 poles, ridge.	10, 659 straps, knapsack.
74 pots, iron.	50 straps, shoulder.
3 pots, coffee.	299 straps and buttons.
3, 606 rags, pounds of.	1, 991 stocks, leather.
51 rests, gun.	1 stool.
56 rings, cap.	7, 381 stockings, pairs of.
1, 353 rings, Sibley tent.	955 sticks, drum, pairs of.
130 ropes, guy.	3, 255 stoves, Sibley.
12, 336 rope, pounds of.	559 stoves, assorted.
205 rope and slides, pounds of.	8 staffs, guidon.
4, 464 sashes.	17 staffs, flag.
1 sashes and towels, lot of.	55 stripes, trousers.
3, 107 sabres, crossed.	1 table.
60 sacking, pounds of.	94 talmas.
5 saddles, pack.	5, 399 tents, hospital.
790 sacks, petit.	8, 372 tents, wall.
1, 254 scales, corporals, pairs of.	3, 293 tents, Sibley.
916 scales, sergeants', pairs of.	21, 990 tents, common.
16, 422 scales, privates', pairs of.	127, 478 tents, shelter.
17, 750 scales, assorted, pairs of.	4, 422 tents, assorted.
382 scales, letters, &c., pounds of.	55, 524 tents, pounds of.
81 scabbards, bayonet.	179, 468 tents and flies, pounds of.
23 scarfs, Zouaves.	156 thread, skeins.
1 scales, spring balance.	54 tins, stove pipe.
32, 603 shovels.	2 ticks, pillow.
2, 429 sheaths, assorted.	275 trumpets.
851 shakos and plates.	10, 872 trousers, foot, pairs of.
2, 132 shoes.	1, 805 trousers, mounted, pairs of.
28 shells, drum.	3, 313 trousers, Zouave, pairs of.
3, 460 shirts, flannel.	32, 751 trousers, assorted, pairs of.
521 shirts, knit.	4, 770 tripods.
5, 554 shirts, assorted.	23, 981 trimmings, hat.
1, 075 shirts, Zouave.	1, 607 turbans.
72 sheets.	1, 450 tufts.
90 skillets.	42 tulips, cap.
144 slings, axe.	2, 239 vests, assorted.
5 slings, color.	100 whips, clothes.

Total value..... \$902, 770 45

Respectfully submitted to the Quartermaster General:

ALEX. J. PERRY,

*Bvt. Brig. Gen., U. S. A., Chief of Second Division.*

QUARTERMASTER GENERAL'S OFFICE,

*Second Division, October 13, 1866.*



*Statement showing the expenditure for the purchase of clothing and equipage, &c., during the fiscal year ending June 30, 1866, at the purchasing depots at New York and Philadelphia.*

New York, clothing and equipage, &c.....	\$1,638,357 21
Philadelphia, clothing and equipage, &c.....	7,054,344 10
Total.....	<u>8,692,701 31</u>

NOTE.—The reports of expenditures at Cincinnati, received from the several officers on duty there during the year, do not show the specific amounts expended on account of clothing and equipage; this item is therefore excluded from the above statement; it will be received, however, in time to be printed as an appendix, if required.

Respectfully submitted to the Quartermaster General:

ALEX. J. PERRY,

*Bvt. Brig. Gen. U. S. A., Chief of Second Division.*

QUARTERMASTER GENERAL'S OFFICE.

*Second Division, October 13, 1866.*

NOTE.—While the above were being printed the report from Cincinnati was received. The expenditure for clothing and equipage at that depot during the fiscal year was \$7,162,202 09.

M. C. MEIGS,

*Quartermaster Gen., Bvt. Maj., Gen.*

Nov. 26, 1866.

*Statement of special transfers of clothing and equipage to the Bureau of Refugees, Freedmen and Abandoned Lands, for issue to freedmen and refugees, exclusive of that transferred under general directions in the southern States, reports of which have not yet been received.*

2,816 hats, untrimmed.	2,483 mittens.
4,697 forage caps.	160 axes.
43 uniform coats, musicians'.	160 axe helvies.
14,512 uniform coats, privates'.	10 hatchets.
25,392 uniform jackets, privates'.	10 hatchet helvies.
145 flannel sack coats.	20 wall tents.
432 flannel sack coats, lined.	20 wall tent flies.
19,783 trousers, pairs, privates'.	20 wall tent poles, sets.
5,905 flannel shirts.	20 wall tent pins, large, sets.
7,305 drawers, pairs.	20 wall tent pins, small, sets.
4,571 stockings, pairs.	59 hospital tents.
74 boots, cavalry, pairs.	9 hospital tent flies.
53,090 bootees, infantry, pairs.	9 hospital tent poles, sets.
28,832 greatcoats.	9 hospital tent pins, large sets.
23,425 blankets.	9 hospital tent pins, small sets.
825 French vests.	829 tents d'abri.
3,163 fez caps.	

Respectfully submitted to the Quartermaster General:

ALEX. J. PERRY,

*Bvt. Brig. Gen. U. S. A., Chief of Second Division.*

QUARTERMASTER GENERAL'S OFFICE,

*Second Division, October 13, 1866.*

Statement of returns of clothing, camp and garrison equipage, received, examined, and transmitted to the Treasury Department for settlement.

	Returns prepared for entry.	Returns entered.	Returns examined.	Returns transmitted.	Entries.	Letters written.	Invoices and returns, stamped and briefed.
1865.							
July . . . . .	57,555	55,931	12,348	12,829	2,467	5,527	37,246
August . . . . .	83,996	96,817	19,165	19,027	3,256	7,620	27,272
September . . . . .	14,355	16,052	36,058	35,794	67,449	14,564	19,299
October . . . . .	10,054	24,981	41,092	41,076	86,917	17,216	15,830
November . . . . .	8,780	24,833	50,759	50,759	89,944	19,070	27,694
December . . . . .	7,363	24,412	46,650	46,495	81,691	17,568	20,702
1866.							
January . . . . .	7,210	7,630	52,164	52,102	102,775	17,196	28,468
February . . . . .	4,748	6,428	42,406	42,301	94,468	12,982	22,566
March . . . . .	4,480	5,750	43,183	43,035	96,798	14,890	18,155
April . . . . .	4,421	4,966	38,665	38,621	82,946	14,933	8,440
May . . . . .	4,227	3,173	37,568	37,668	76,573	16,127	12,033
June . . . . .	3,214	5,570	16,071	16,109	43,382	12,528	7,674
Total . . . . .	210,403	276,543	436,129	435,816	828,666	170,221	235,379

Respectfully submitted to the Quartermaster General :  

ALEX. J. PERRY,  
Brevet Brigadier General U. S. A., Chief of Second Division.

  
QUARTERMASTER GENERAL'S OFFICE,  
Second Division, October 13, 1866.

Statement of claims for property purchased and seized for use of the army, received in the second division of the Quartermaster General's office, during the fiscal year ending June 30, 1866.

Number of claims received, 40 ; amounting to . . . . . \$13,596 69  
Number of claims referred and recommended for settlement, 10 ;  
amounting to . . . . . 6,720 09  
Number of claims disallowed, 11 ; amounting to . . . . . 2,255 07  
Number of claims not finally adjusted, 19 ; amounting to . . . . . 4,621 53

Respectfully submitted:  

ALEX. J. PERRY,  
Colonel and Brevet Brigadier General U. S. A.

  
QUARTERMASTER GENERAL'S OFFICE,  
Washington, D. C., October 13, 1866.

## No. 5.

## THIRD DIVISION—OCEAN AND LAKE TRANSPORTATION.

QUARTERMASTER GENERAL'S OFFICE,  
Washington, D. C., October 10, 1866.

GENERAL: I have the honor to transmit herewith my annual report of the operations of the third division of this office during the fiscal year ending June 30, 1866.

Accompanying this report are the following statements pertaining to this division:

List of vessels owned.

List of vessels chartered.

Statement of property sold.

Statement of vessels captured during the war.

Statement of vessels lost or destroyed during the war.

Statement of claims presented, audited, and rejected.

In connection with this, I would state that the accompanying statements are not as complete as they otherwise would have been, had the officers of this department complied with the repeated and timely instructions from this office, and furnished the necessary information called for.

I am, general, very respectfully, your obedient servant,

GEO. D. WISE, *Colonel, Q. M. D.,*

*Brevet Brigadier General, in charge Third Division.*

Brevet Major General M. C. MEIGS,

*Quartermaster General U. S. A., Washington, D. C.*

QUARTERMASTER GENERAL'S OFFICE,  
Washington, October, 1866.

GENERAL: In compliance with General Orders No. 49, Quartermaster General's office, dated June 15, 1866, I have the honor to submit the following report, embracing the operations of the third division, in charge of ocean and lake transportation, for the fiscal year ending June 30, 1866:

My annual report for the fiscal year ending June 30, 1865, was forwarded to the Quartermaster General August 31, 1865.

Since the date of that report the expenses of the division have been steadily decreasing, as shown more fully by the following data:

July 1, 1865, 590 vessels, with a tonnage of 193,936 tons, were employed, costing per day \$82,405; January 1, 1866, 201 vessels, with a tonnage of 65,936 tons, were employed, costing per day \$16,045; June 30, 1866, 53 vessels were employed, with a tonnage of 14,163 tons, costing per day \$3,000, showing a reduction of \$79,405 per day between the commencement and end of the fiscal year.

With the close of the war, and quiet being restored to the country, private enterprise has gradually obviated the necessity for government to own or charter vessels, and prompt advantage has been taken in all cases where the transportation could be done by private lines of vessels, whether sail or steam, to put out of service those that were in special government employ.

The total sales pertaining to the division for the last fiscal year amount to \$1,767,844 69.

This is but a small proportion of the original cost of the material, yet taking into consideration the great wear and tear of such property during the war, and its depreciation by the large amount put in the market, it brought a fair commercial value.

In the early part of the year the return of the 25th army corps from Texas and the mustering out of service of other large bodies of troops in the departments of the south, making a continuous movement of nearly ninety thousand (90,000) men, required a number of expensive ocean steamers to be retained in service.

Vessels with the light draught of water required for crossing the shoal bars on the coast of Texas, with few exceptions, could not be obtained sufficiently seaworthy for long ocean voyages, and therefore much detention was experienced at those points by the necessity of employing lighters to take the troops and freight over the bars. There is no report of loss of life by these returning transports.

March 21, 1866, the steamer *Convoy*, belonging to the government, was burnt at sea off Barrancas, Florida, caused by the explosion of a lamp containing coal oil. In this connection I cannot too strongly condemn the practice of using this inflammable material for illuminating purposes on shipboard, it being a frequent cause of loss to life and property. The steamer was a total loss, but the crew were saved.

A detailed statement accompanies this report showing the total number of vessels, owned and chartered, lost during the war, pertaining to ocean and lake service.

During the past year, besides the *Convoy*, the propeller *Patroon* was lost on Brazos bar November, 1865, and the side-wheel steamer *Mary Hill*, in Trinity river, Texas, during the same month. The schooners *Skirmisher*, *Scout*, and *Union* were also lost during the year on the coast of Texas. All these vessels belonged to the government.

This division has furnished transportation during the fiscal year for one hundred and twenty-eight thousand six hundred and fifty-five (128,655) men, exclusive of transportation for twenty-nine hundred and twenty-six (2,926) freedmen. This is as far as reported, but the actual amount is supposed to be much greater.

Between August, and October, 1865, twenty-eight hundred and thirty-two (2,832) men of the fourteenth regiment United States infantry were sent by the regular steamers from New York to San Francisco.

In August, 1865, a portion of the second United States artillery, comprising six hundred and fifty-one (651) men and officers, were sent from Baltimore in two government steamers to Aspinwall, in time to cross the isthmus and meet the regular Pacific steamers at Panama for San Francisco. It is of great importance in the transportation of troops by this route during the summer months that no delay should occur at Aspinwall or Panama which would expose them to the attack of the deadly coast fever.

Between October, 1865, and April, 1866, ten hundred and forty-two (1,042) men of the sixth regiment United States cavalry were sent to New Orleans from New York, by the regular lines of steamers, and during the same time five hundred and forty-nine (549) men of the fifth regiment United States artillery were sent from New York to Fort Monroe, Key West, and the Dry Tortugas, by the same mode of transportation.

The troops who sailed from New York in October, 1865, were exposed to the severest gale that had visited the southern coast since the hurricane of 1835, when the Sand Key light was carried away. At Key West every vessel in the harbor except the *Massachusetts* went on shore, including the United States double-ender *Muscoota*. None of the vessels containing troops were lost, although obliged to put into the nearest port in distress.

Between November, 1865, and March, 1866, fourteen hundred and eighty-four (1,484) men of the first regiment United States cavalry were sent from New York, part to New Orleans and the remainder to San Francisco.

In December, 1865, a detachment of the same regiment, consisting of twenty

(20) officers, six hundred and twenty-six (626) men, and twenty-two (22) laundresses, sailed from San Francisco *via* Aspinwall, in the government steamer McClellan, taking the regular lines on the Pacific coast.

In January, 1866, four companies of the fifth regiment United States cavalry, including officers, men, horses and equipments, were transported from Baltimore and Washington to Charleston, South Carolina, in a chartered steamer. Considerable delay was caused at this time by the ice blocking up the Potomac.

Throughout the year large numbers of troops and government material have been transported between Baltimore, Fortress Monroe, Norfolk and Richmond, by the bay lines of steamers.

This transportation, owing to strong competition between rival lines, has been done at low rates.

In March, 1866, the steamer Illinois, of twenty-one hundred and twenty-three (2,123) tons, then lying in the harbor of New York, was, by order of the Secretary of War, turned over to the authorities of New York to be used as a hospital ship for cholera patients.

The quartermaster's department has also furnished through this division, steamers, sail vessels, and small boats for quarantine purposes on the coast. This duty I would recommend to be performed by the Treasury Department, through the vessels of the revenue marine, which could do it at much less expense to the United States than the quartermaster's department.

The number of claims received and acted upon by this division are two thousand and fifty-two (2,052,) and amount to nine million five hundred and sixty-seven thousand six hundred and twenty dollars and fifty-four cents (\$9,567,620 54.)

In further explanation of the work of this division during the last fiscal year ending June 30, 1866, I respectfully refer you to the accompanying statements of vessels chartered and employed; vessels owned by the United States; report of property sold; vessels captured during the war; vessels lost during the war; claims received, audited and rejected.

I have the honor to remain, very respectfully, your obedient servant,

GEO. D. WISE,

*Brevet Brig. Gen., in charge of Ocean and Lake Transportation.*

Brevet Major General M. C. MEIGS,

*Quartermaster General U. S. A., Washington, D. C.*

*List of vessels chartered and employed by the quartermaster's department on ocean and lake service during the fiscal year ending June 30, 1866.*

Name.	Class.	Tonnage.	Rate per day.	Date of discharge.
1. Arago.....	Side-wheel steamer..	2,240	\$950 00	July 25, 1865
2. Atlanta.....	Propeller.....	1,054	474 30	July 14, 1865
3. Alliance.....	.....do.....	500	150 00	Oct. 5, 1865
4. Allison, M. S.....	Side-wheel steamer..	148	80 00	July 15, 1865
5. Anna Maria.....	.....do.....	313	140 92	Sept. 9, 1865
6. Ariel.....	.....do.....	1,736	550 00	July 27, 1865
7. Alert.....	Screw tug.....	67	40 00	Sept. 15, 1865
8. Alida.....	.....do.....	78	40 00	Oct. 30, 1865
9. Ambition.....	.....do.....	35	*42 00	April 12, 1865
10. Adelia.....	.....do.....	116	53 00	July 28, 1865
11. Aspinwall.....	Pilot-boat.....	99	40 00	Aug. 29, 1865

\* Reduced to \$30.

*List of vessels chartered, &c.—Continued.*

Name.	Class.	Tonnage.	Rate per day.	Date of discharge.
12. Adams, George S. ....	Schooner. ....	239	\$35 84	July 11, 1865
13. Amora .....	do. ....	112	45 00	Jan. 13, 1866
14. Abby "B"* .....	do. ....	79	15 00	Aug. 18, 1865
15. Anna Sophia .....	do. ....	120	22 00	Aug. 5, 1865
16. Americus .....	do. ....	302	40 27	Mar. 22, 1866
17. Agnes .....	do. ....	146	50 00	April 30, 1866
18. Adams .....	do. ....	106	30 00	Sept. 30, 1865
19. Aurora .....	do. ....	112	50 00	Jan. 13, 1866
20. Audenried, Lewis .....	Barge. ....	131	10 52	†July 18, 1865
21. Alexander the Great .....	do. ....	119	9 58	Aug. 27, 1865
22. Baker, Lizzie .....	Side-wheel steamer ..	432	120 00	Aug. 9, 1865
23. Burden, Henry .....	do. ....	268	†120 00	Sept. 5, 1865
24. Brooks, John .....	do. ....	780	351 00	Aug. 8, 1865
25. Banks, Nathaniel P. ....	do. ....	399	300 00	Aug. 16, 1865
26. Brady, James T. ....	do. ....	1,402	450 00	Aug. 16, 1865
27. Baltic .....	do. ....	434	195 30	Oct. 2, 1865
28. Barnes, General J. K. ....	do. ....	1,365	614 00	Feb. 3, 1866
29. Beverly .....	Propeller .....	182	85 00	Oct. 11, 1865
30. Beaufort .....	do. ....	294	132 30	Jan. 7, 1866
31. Barton, Rebecca .....	do. ....	350	160 00	Feb. 6, 1866
32. Blackstone .....	do. ....	991	317 00	Aug. 8, 1865
33. Buck, Dudley .....	do. ....	593	189 00	Mar. 15, 1866
34. Boardman, Mary A. ....	do. ....	534	171 00	Aug. 29, 1865
35. Biddle, E. C. ....	do. ....	176	79 19	Jan. 31, 1866
36. Blackbird .....	Side-wheel steamer ..	256	120 00	Nov. 2, 1865
37. Belle, Nettie .....	do. ....	141	75 00	Aug. 22, 1865
38. Briarly, Armitage .....	Steam barge .....	160	70 00	July 24, 1865
39. Bell, R. A. ....	Steamer .....	120	100 00	Aug. 31, 1865
40. Boyer, L. ....	Tug .....	101	52 50	Aug. 3, 1865
41. Burnside, Gen. A. E. ....	do. ....	72	50 00	Oct. 10, 1865
42. Brown, Colonel S. L. ....	do. ....	42	40 00	Aug. 11, 1865
43. Butterfly .....	Schooner .....	100	15 00	July 6, 1865
44. Biven, E. C. ....	do. ....	66	8 86	Oct. 31, 1865
45. Brown, Mary .....	do. ....	291	80 00	Aug. 3, 1865
46. Boyd, James .....	do. ....	146	19 33	July 27, 1865
47. Blue, Rhodella .....	do. ....	270	36 00	Feb. 11, 1866
48. Board of Trade .....	Barge .....	135	10 80	July 3, 1865
49. Baker, Colonel G. M. ....	do. ....	135	10 80	Aug. 5, 1865
50. Bird Hill Boy .....	do. ....	104	12 00	July 6, 1865
51. Broad Mountain .....	do. ....	116	9 34	†July 27, 1865
52. Blue Bird .....	do. ....	100	12 00	July 21, 1865
53. Blue Mountain .....	do. ....	122	9 81	July 13, 1865
54. Bennett, Lizzie E. ....	do. ....	135	10 87	Aug. 11, 1865
55. Baxter, William M. ....	Double deck barge ..	110	11 35	†July 10, 1865
56. Charleston .....	Side-wheel steamer ..	233	105 00	Nov. 11, 1865
57. Connecticut .....	do. ....	1,129	500 00	Sept. 9, 1865
58. Crescent .....	do. ....	678	500 00	†Aug. 1, 1865
59. Champion .....	do. ....	441	198 45	July 3, 1865
60. Columbia .....	do. ....	768	346 00	Nov. 13, 1865
61. Coit, W. W. ....	do. ....	399	193 28	Nov. 24, 1865
62. Clinton .....	do. ....	721	550 00	†Aug. 1, 1865
63. Cambria .....	Propeller .....	420	350 00	Sept. 25, 1865
64. Cahill, Thomas E. ....	do. ....	195	75 00	Aug. 4, 1865
65. Custar, General .....	do. ....	542	200 00	Aug. 15, 1865
66. Clyde, Rebecca .....	do. ....	446	200 93	Mar. 15, 1866
67. Constitution .....	do. ....	944	400 00	July 21, 1865
68. Cassandra .....	do. ....	1,285	578 25	July 18, 1865
69. Champion .....	do. ....	1,452	464 00	Aug. 11, 1865
70. Concordia .....	do. ....	1,681	538 00	Aug. 11, 1865
71. Clyde, William P. ....	do. ....	504	226 80	Sept. 18, 1865
72. Coleman, J. D. ....	do. ....	166	45 00	Sept. 7, 1865

\* Rechartered June 9, 1866. In service at Savannah on quarantine.  
† Reduced to \$85.

† Purchased at above date.



*List of vessels chartered, &c.—Continued.*

Name.	Class.	Tonnage.	Rate per day.	Date of discharge.
73. Congress .....	Propeller .....	452	\$175 00	Jan. 3, 1866
74. Columbus .....	Side-wheel tug .....	370	175 00	Aug. 7, 1865
75. Catlin, Pope .....	Tug .....	148	35 00	In serv'e, N.Y.
76. Constitution .....	do .....	123	70 00	Jan. 21, 1866
77. Champion .....	do .....	57	60 00	Sept. 22, 1865
78. Croatan .....	do .....	28	40 00	Jan. 1, 1866
79. Clyde .....	do .....	96	50 00	Oct. 22, 1865
80. Chesapeake .....	do .....	93	55 00	Sept. 13, 1865
81. Chowan .....	do .....	56	40 00	Aug. 29, 1865
82. Columbia .....	do .....	125	70 00	July 25, 1865
83. Champlin, T. H. ....	do .....	.....	.....	Sept. 19, 1865
84. Clark, A. ....	do .....	96	40 00	Aug. 1, 1865
85. Concord .....	Brig .....	344	50 00	Jan. 25, 1866
86. Cady, S. H. ....	Schooner .....	209	31 33	Aug. 17, 1865
87. Campbell, Mary .....	do .....	.....	.....	Nov. 18, 1865
88. Chief .....	do .....	296	.....	Aug. 17, 1865
89. Clara .....	do .....	247	41 16	Aug. 7, 1865
90. Crocket, Louisa .....	do .....	273	40 00	Mar. 21, 1866
91. Catherine Ann .....	Barge .....	118	9 47	Aug. 27, 1865
92. Coleman, Hunter .....	do .....	112	8 90	*July 31, 1865
93. Clarkson, Thomas .....	Double-deck barge ..	120	17 60	*July 14, 1865
94. Craig, S. E. ....	Barge .....	153	20 52	Aug. 16, 1865
95. Colino .....	do .....	130	10 00	Dec. 31, 1865
96. Diamond State .....	Side-wheel steamer ..	312	140 00	Dec. 7, 1865
97. Davidson, M. B. ....	do .....	134	100 00	Oct. 12, 1865
98. Decatur .....	Propeller .....	337	140 00	Sept. 27, 1865
99. Delaware .....	do .....	.....	150 00	Aug. 23, 1865
100. Don Juan .....	Tug .....	60	30 00	May 15, 1866
101. Dupont, S. F. ....	do .....	126	70 00	Nov. 4, 1865
102. Dodge, George S. ....	do .....	61	45 00	Sept. 25, 1865
103. Dell, Alice .....	Schooner .....	.....	.....	Lost July, 1865
104. Dornfield .....	Barge .....	135	10 80	Oct. 19, 1865
105. Doris .....	Propeller .....	1,360	650 00	July 25, 1865
106. Dunan, Hugh .....	Barge .....	124	19 95	Aug. 22, 1865
107. Everett, Edw. ....	Side-wheel steamer ..	805	285 00	Nov. 24, 1865
108. Eagle .....	do .....	175	110 00	Sept. 29, 1865
109. Ella .....	do .....	246	150 00	Aug. 21, 1865
110. Exchange .....	do .....	227	100 00	Feb. 6, 1866
111. El Primero .....	do .....	.....	100 00	Unknown.
112. Enterprise .....	do .....	.....	100 00	Unknown.
113. Empire .....	Propeller .....	416	187 28	Mar. 19, 1866
114. Everman, J. W. ....	do .....	692	250 00	Feb. 5, 1866
115. Ella .....	Tug .....	53	30 00	July 31, 1865
116. Eddy, Sam .....	Schooner .....	276	36 80	July 21, 1865
117. Elwell, Clara W. ....	do .....	296	44 40	July 8, 1865
118. Elizabeth B. ....	do .....	99	40 00	Sept. 4, 1865
119. Elizabeth and Eleanor ..	do .....	258	34 40	Aug. 8, 1865
120. Empire State .....	do .....	91	36 67	Sept. 9, 1865
121. Electric Spark .....	do .....	66	15 83	Oct. 26, 1865
122. Ellen, Mary .....	Barge .....	177	23 60	July 25, 1865
123. Ellis, James L. ....	do .....	123	9 89	*July 27, 1865
124. Fulton .....	Side-wheel steamer ..	2,307	950 00	July 16, 1865
125. Foulks, Thomas .....	do .....	155	90 00	Aug. 17, 1865
126. Fletcher, A. ....	do .....	160	140 00	April 28, 1866
127. Frazier, W. W. ....	do .....	128	65 00	Oct. 31, 1865
128. Falcon .....	Propeller .....	875	394 00	Aug. 8, 1865
129. Fairbanks .....	do .....	491	221 25	Aug. 10, 1865
130. Francis .....	do .....	352	150 00	Mar. 17, 1866
131. Fairy Queen .....	Tug .....	46	35 00	July 3, 1866
132. Foote, Commodore .....	do .....	106	70 00	Feb. 2, 1866
133. Fuller, John .....	do .....	93	75 00	July 17, 1865

\* Purchased at above date.

*List of vessels chartered, &c.—Continued.*

Name.	Class.	Tonnage.	Rate per day.	Date of discharge.
134. Fairy .....	Side-wheel tug.....	43	\$30 00	Oct. 13, 1865
135. Ford, J. R.....	Schooner.....	138	18 48	Sept. 27, 1865
136. Frederic 2d .....	do.....	.....	.....	Sept. 14, 1865
137. Financier .....	Barge.....	135	10 81	*Oct. 27, 1865
138. Forsyth, Fanny.....	do.....	126	10 14	July 22, 1865
139. Frazier, F. J.....	Schooner.....	140	21 00	July 6, 1865
140. Flannery, H.....	Barge.....	129	10 34	*Sept. 14, 1865
141. Florence, Thomas B..	do.....	125	12 00	July 21, 1865
142. Flag of Our Union....	do.....	125	12 00	July 3, 1865
143. Franklin, Benjamin ..	do.....	182	20 00	Aug. 19, 1865
144. Fair Lady.....	do.....	132	12 00	July 21, 1865
145. Guy, James .....	Side-wheel steamer..	149	67 50	Aug. 10, 1865
146. Green, James S .....	Propeller.....	373	150 00	Aug. 21, 1865
147. Glaucus .....	do.....	1,730	1,000 00	July 31, 1865
148. Goliath .....	Tug .....	117	75 00	Feb. 14, 1866
149. Getty, A.....	do.....	120	80 00	Nov. 24, 1865
150. Grant, U. S.....	do.....	234	115 00	Oct. 10, 1865
151. Genin, John N.....	Schooner .....	295	45 00	Nov. 24, 1865
152. Gunson, Ellen .....	Barge .....	118	9 24	Aug. 23, 1865
153. Houghton, Charles ...	Side-wheel steamer..	268	125 00	Nov. 14, 1865
154. Hooker, General .....	do.....	266	125 00	Nov. 14, 1865
155. Hunt, Washington....	do.....	103	40 00	Sept. 10, 1865
156. Hudson .....	do.....	163	100 00	Aug. 15, 1865
157. Hero.....	do.....	462	207 90	Aug. 21, 1865
158. Hancox, Eliza.....	do.....	346	156 38	May 26, 1866
159. Howard .....	Stern-wheel steamer.	158	85 00	Aug. 7, 1865
160. Harder, Andrew.....	Propeller.....	392	176 00	Aug. 23, 1865
161. Hudson .....	Side-wheel steamer..	863	†388 35	Feb. 2, 1866
162. Hagar, H. S .....	Propeller.....	1,306	418 00	July 24, 1865
163. Huguenot .....	do.....	495	100 00	July 14, 1865
164. Huron .....	Tug .....	116	65 00	July 12, 1865
165. Hawkins, B. N.....	Schooner.....	396	52 80	July 17, 1865
166. Helm, Alice .....	do.....	.....	15 00	Sept. 29, 1865
167. Hill, C. B.....	Barge .....	234	35 00	July 22, 1865
168. Harvest Moon.....	do.....	109	12 00	July 21, 1865
169. Holcomb, Thomas....	Schooner.....	444	53 00	April 27, 1866
170. Idaho .....	Propeller. ....	523	200 00	Aug. 19, 1865
171. Ingalls, Col. Rufus...	Tug .....	65	50 00	Oct. 10, 1865
172. Island Belle .....	Schooner.....	171	27 50	Nov. 18, 1865
173. Iowa.....	Barge .....	258	34 44	Aug. 22, 1865
174. Industrious .....	do.....	119	9 50	July 25, 1865
175. Jefferson. ....	Side-wheel steamer..	443	225 00	*Oct. 17, 1865
176. Johnson, Joseph. ....	do.....	242	108 92	Dec. 5, 1865
177. Johnson, L. A.....	Schooner.....	296	39 46	July 29, 1865
178. Jones, J. D.....	Pilot boat .....	108	40 00	Aug. 25, 1865
179. Julia .....	do.....	20	20 00	Nov. 17, 1865
180. Jenkins, Nellie.....	Steam barge.....	63	30 00	Aug. 21, 1865
181. Jackson, F. H .....	Barge.....	124	9 92	July 15, 1865
182. Knight, Ellie .....	Propeller.....	452	203 00	Aug. 18, 1865
183. Kingfisher.....	do.....	755	340 00	July 22, 1865
184. Kennedy, William....	do.....	1,000	700 00	July 22, 1865
185. Kerfoot, G. B.....	Tug .....	49	42 50	Aug. 12, 1865
186. King, Francis .....	do.....	114	70 00	Jan. 27, 1866
187. Kodiak .....	Brig .....	420	77 06	Feb. 6, 1866
188. Kirkslayer, M. W....	Barge.....	128	10 28	July 8, 1865
189. Kirkpatrick, M. E....	do.....	129	10 32	Nov. 1, 1865
190. Louise .....	Side-wheel steamer..	1,352	600 00	Sept. 4, 1865
191. Lewis, J. M .....	do.....	150	100 00	Sept. 2, 1865
192. Loyalist.....	do.....	338	152 46	Sept. 11, 1865
193. Lady Lang .....	do.....	738	200 00	Feb. 13, 1866
194. Livingston, Herman..	do.....	1,314	591 41	Aug. 9, 1865
195. Loane, George J.....	do.....	115	75 00	July 5, 1865

\* Purchased at above date.

† Reduced to \$300.

*List of vessels chartered, &c.—Continued.*

Name.	Class.	Tonnage.	Rate per day.	Date of discharge.
196. Leader .....	Propeller .....	182	\$85 00	Aug. 2, 1865
197. Louisburg .....	do .....	894	365 00	Jan. 15, 1866
198. Leary, C. C. ....	do .....	841	375 00	Aug. 22, 1865
199. Lavergne, F. ....	Tug .....	72	40 00	Sept. 1, 1865
200. Louis .....	do .....	89	85 00	Jan. 15, 1866
201. Logan, Jane .....	do .....		75 00	Sept. 18, 1865
202. Lynchburg .....	Schooner .....	319	42 67	Aug. 19, 1865
203. Lilly No. 2 .....	do .....		30 00	Lost Oct., 1865
204. Long, Whitney .....	do .....		12 50	Jan. 10, 1866
205. Locust Mountain .....	Barge .....	119	9 56	* July 27, 1865
206. Lafferty, Charles .....	do .....	107	12 00	July 6, 1865
207. Lady of the Lake .....	do .....	102	8 16	Aug. 12, 1865
208. Louise .....	do .....		12 50	Oct. 19, 1865
209. Lee, J. T. ....	do .....	128	17 06	Aug. 19, 1865
210. Lamb, M. ....	do .....	117	20 00	* July 10, 1865
211. Low, Waterst .....	do .....	25	10 00	
212. Matagorda .....	Side-wheel steamer ..	992	446 00	Oct. 28, 1865
213. Maryland .....	do .....	336	140 00	Sept. 2, 1865
214. Matamora .....	do .....	311	140 00	Aug. 4, 1865
215. Monitor .....	do .....	309	150 00	Aug. 11, 1865
216. McCallum, Gen. D. C. ....	do .....	694	300 00	April 15, 1866
217. Mabey, R. L. ....	do .....	140	40 00	Nov. 11, 1865
218. Morris, Robert .....	do .....	462	175 00	Sept. 21, 1865
219. Morgan, Thomas A. ....	do .....	482	200 00	Sept. 10, 1865
220. Marvin, Governor † .....	do .....	474	260 00	
221. Mount, D. H. ....	Propeller .....	321	125 00	Aug. 14, 1865
222. Montauk .....	do .....	499	175 00	Feb. 3, 1866
223. Metis .....	do .....	1,360	650 00	Nov. 23, 1865
224. Meteor .....	do .....	1,533	490 00	July 28, 1865
225. McClellan .....	Tug .....	97	60 00	July 6, 1865
226. Morton, Jennie .....	Schooner .....	228	30 40	Jan. 16, 1866
227. Montezuma .....	do .....	126	36 33	Jan. 20, 1866
228. Marine .....	do .....	299	60 00	Dec. 21, 1865
229. Matthews, C. ....	Brig .....	189	53 00	July 15, 1865
230. Magee, James .....	Schooner .....	119	15 86	§ Aug. —, 1865
231. Maggie .....	do .....	13	25 00	Nov. 9, 1865
232. Mystic .....	do .....	272	50 00	Oct. 18, 1865
233. Mulford, Lewis .....	do .....	225	30 06	Jan. 30, 1866
234. McCaffrey, Ann .....	Barge .....	132	10 60	* July 22, 1865
235. Murray, Ellen .....	do .....	140	11 23	July 12, 1865
236. Murray, James .....	do .....	135	10 80	July 3, 1865
237. McClain, John .....	do .....	119	12 00	Aug. 2, 1865
238. Miller, George .....	do .....	125	10 00	Oct. 26, 1865
239. Morning Light .....	do .....	129	10 37	July 19, 1865
240. Missouri .....	do .....	120	9 60	July 31, 1865
241. McClellan, G. B. ....	do .....	99	10 00	Aug. 12, 1865
242. McClellan, Gen. Geo. B. ....	do .....	116	9 33	July 7, 1865
243. Northern Light .....	Side-wheel steamer ..	1,762	792 00	July 21, 1865
244. North Star .....	do .....	2,004	641 00	July 27, 1865
245. Newton .....	do .....	140	120 00	Aug. 8, 1865
246. Norfolk .....	Propeller .....	329	160 00	Sept. 21, 1865
247. Nightingale .....	do .....	815	366 75	Aug. 7, 1865
248. Nereus .....	do .....	1,750	1,000 00	July 29, 1865
249. North Point .....	do .....	523	275 00	Oct. 10, 1865
250. Neptune .....	do .....	1,730	1,000 00	Aug. 18, 1865
251. New Jersey .....	do .....	494	221 61	April 2, 1866
252. Neptune .....	Tug .....	166	100 00	Aug. 18, 1865
253. Nickerson, E. ....	Schooner .....	227	34 33	Aug. 7, 1865
254. Nichols, W. ....	Brig .....	180	24 00	July 31, 1865
255. North Carolina .....	Schooner .....	107	14 40	July 3, 1865
256. Newberg .....	Brig .....	260	65 00	July 15, 1865
257. Nutten, Dr. W. F. ....	Barge .....	135	10 80	July 3, 1865

\* Purchased at above date.

† In service, Brownsville.

‡ In service, Florida.

§ Sunk.

*List of vessels chartered, &c.—Continued.*

Name.	Class.	Tonnage.	Rate per day.	Date of discharge.
258. Newcomb, A.....	Barge.....	143	\$11 50	July 8, 1865
259. Naulty, Ann.....	do.....	105	12 00	July 18, 1865
260. Ocean Wave.....	Side-wheel steamer..	270	121 50	Aug. 11, 1865
261. Oriental.....	Propeller.....	740	290 00	July 29, 1865
262. Othello.....	Schooner.....	346	50 00	Aug. 7, 1865
263. Ocean Eagle.....	Bark.....	318	68 98	Aug. 22, 1865
264. Oregon.....	Schooner.....	.....	50 00	Jan. 4, 1866
265. Olive Branch.....	Barge.....	122	9 80	July 3, 1865
266. Oregon.....	do.....	134	11 73	Sept. 18, 1865
267. Oregon.....	do.....	263	35 06	July 17, 1865
268. Osborn, E. W.....	do.....	103	8 24	July 25, 1865
269. O'Reilly, Major.....	do.....	133	10 70	Sept. 4, 1865
270. Ogden, Isaac.....	do.....	222	40 00	Dec. 23, 1865
271. Pearce, Silas O.....	Side-wheel steamer..	195	95 00	Feb. 26, 1866
272. Pentz, Nellie.....	do.....	828	250 00	*Nov. 29, 1865
273. Prince Albert.....	do.....	523	250 00	Mar. 11, 1866
274. Prometheus.....	Propeller.....	664	300 00	Sept. 9, 1865
275. Perit.....	do.....	713	320 00	July 10, 1865
276. Portland.....	do.....	92	65 00	Sept. 18, 1865
277. Palmer, Everard.....	do.....	45	40 00	July 15, 1865
278. Page, Blanche.....	do.....	88	60 00	Nov. 24, 1865
279. Porter, Admiral D. D..	do.....	192	125 00	Sept. 15, 1865
280. Plato.....	do.....	115	65 00	Jan. 2, 1866
281. Pearson, Maria†.....	Schooner.....	351	52 63	.....
282. Pettet, O. M.....	do.....	269	40 33	July 18, 1865
283. Ponder, John.....	do.....	208	31 33	July 28, 1865
284. Pickup, Maria.....	do.....	199	26 66	Sept. 30, 1865
285. Plandome†.....	do.....	266	30 00	.....
286. Post, Ralph.....	do.....	427	65 00	April 9, 1866
287. Pries, Lilly.....	do.....	56	10 38	Aug. 7, 1865
288. Pratt, E. W.....	do.....	218	36 60	July 27, 1865
289. Page, Thomas.....	do.....	160	21 33	July 11, 1865
290. Peters, Florence.....	Bark.....	347	76 23	Aug. 22, 1865
291. Pettit, B. F.....	Barge.....	125	10 02	July 16, 1865
292. Pool, Lorinda.....	do.....	127	10 22	July 22, 1865
293. Perrine, Thomas.....	do.....	136	10 88	Sept. 28, 1865
294. Patterson.....	do.....	263	35 08	Aug. 23, 1865
295. Quinnebaug.....	Propeller.....	336	130 00	*July 29, 1865
296. Queen of the West...	Schooner.....	338	45 16	Aug. 18, 1865
297. Quartz.....	Barge.....	115	9 27	§July 21, 1865
298. River Queen.....	Side-wheel steamer..	536	241 20	Oct. 30, 1865
299. Richmond.....	do.....	948	425 00	Aug. 24, 1865
300. Ruthven, A. S.....	do.....	210	165 00	Feb. 13, 1866
301. Relief.....	Propeller.....	351	150 00	Sept. 22, 1865
302. Rotan, Sam.....	Tug.....	43	42 00	Aug. 9, 1865
303. Rotary.....	do.....	127	50 00	Oct. 15, 1865
304. Ripple§.....	Wrecking schooner..	135	125 00	.....
305. Rambler.....	Bark.....	367	60 00	Mar. 8, 1866
306. Runyon, J. C.....	Schooner.....	162	21 60	July 3, 1865
307. Rosebud.....	Sloop.....	.....	.....	Oct. 14, 1865
308. Royer, Lewis.....	Barge.....	134	10 72	July 3, 1865
309. Ryan.....	do.....	131	10 48	July 27, 1865
310. St. Mary's.....	Side-wheel steamer..	678	500 00	§Aug. 1, 1865
311. Suwanee.....	do.....	684	250 00	Dec. 28, 1865
312. Smith, C. P.....	do.....	130	50 00	Nov. 13, 1865
313. Stevens, J. A.....	do.....	150	60 00	Nov. 6, 1865
314. Swan, Thomas.....	do.....	460	200 00	Dec. 25, 1865
315. Stephens, S. A.¶.....	do.....	142	40 00	.....
316. State of Maine.....	do.....	806	400 00	Aug. 11, 1865
317. Sylvan Shore.....	do.....	217	98 65	Oct. 4, 1865
318. Savannah.....	do.....	1,818	818 00	Sept. 4, 1865
319. Santa Martha.....	do.....	419	188 55	Jan. 4, 1866

\* Lost.

† In service, Baltimore.

‡ In service, Charleston.

¶ In service, New York.

§ Purchased at above date.

*List of vessels chartered, &c.—Continued.*

Name.	Class.	Tonnage.	Rate per day.	Date of discharge.
20. Salvor .....	Propeller.....	450	\$202 71	July 24, 1865
21. Star of the South.....	do.....	960	400 00	July 9, 1865
22. Shipley, General .....	Stern-wheel steamer..	279	110 00	Oct. 5, 1865
23. Sheridan, General.....	Tug .....	128	100 00	Nov. 24, 1865
24. Sherman, General .....	do.....	129	150 00	Nov. 9, 1865
25. Schuyler, T .....	do.....	30	30 00	Aug. 28, 1865
26. Shepard, C. T.....	do.....	61	60 00	April 17, 1866
27. Scudder, Horace .....	Bark .....	327	43 60	Jan. 27, 1866
28. Searsville .....	Schooner.....	260	34 80	July 24, 1865
29. Star .....	do.....	113	.....	Unknown.
30. Snow Squall.....	do.....	137	50 00	April 9, 1866
31. Sharp, S. H.....	do.....	248	41 42	April 3, 1866
32. Sawyer, S. H.....	Brig.....	370	46 66	Jan. 4, 1866
33. Senorita .....	do.....	263	50 00	Feb. 23, 1866
34. Stebbins, S. B.....	Schooner.....	.....	.....	Nov. 28, 1865
35. Slade, E.....	do.....	286	47 33	Oct. 6, 1865
36. St. Helena.....	do.....	18	40 00	Feb. 9, 1866
37. Sailor, A.....	Barge .....	108	12 00	Aug. 10, 1865
38. Stevens, Jim .....	do.....	132	10 58	July 13, 1865
39. Silliman, R. D.....	do.....	165	22 06	Aug. 16, 1865
40. Safe Return .....	do.....	123	9 90	July 1, 1865
41. Tampico .....	Side-wheel steamer..	301	135 45	March 3, 1866
42. Tonawanda.....	Propeller.....	755	340 00	Aug. 25, 1865
43. Tappahannock.....	do.....	405	182 25	Jan. 17, 1866
44. Triton .....	do.....	633	240 78	Nov. 13, 1866
45. Tillie .....	do.....	466	200 00	Jan. 27, 1865
46. Transit .....	do.....	393	176 00	July 6, 1865
47. Thetis .....	do.....	1,360	650 00	July 28, 1865
48. Trade Wind.....	do.....	426	200 00	Aug. 29, 1865
49. Taylor, Moses .....	Tug .....	100	40 00	Dec. 31, 1865
50. Tempest.....	do.....	86	50 00	Jan. 30, 1866
51. Turner, Alvin A.....	do.....	182	81 96	July 5, 1865
52. Trinity.....	Bark .....	422	63 30	Aug. 22, 1865
53. Tyler, Susan M. *.....	Schooner.....	228	38 10	.....
54. Tyler, Nathan .....	do.....	132	17 60	July 10, 1865
55. Thomas, Albert.....	do.....	463	61 73	Aug. 18, 1865
56. Transit .....	do.....	297	37 00	Aug. 18, 1865
57. Transport .....	Barge .....	256	20 00	July 24, 1865
58. Tracy, Emma .....	do.....	135	10 82	July 13, 1865
59. United States.....	Propeller.....	1,290	580 00	July 19, 1865
60. Union .....	do.....	225	140 00	July 24, 1865
61. Union .....	Tug .....	88	50 00	Aug. 24, 1865
62. Uncle Abe .....	do.....	95	60 00	July 3, 1865
63. Union .....	Barge .....	127	10 23	†Sept. 8, 1865
64. Uncle Sam .....	do.....	147	12 00	July 21, 1865
65. Vulcan .....	Side-wheel steamer..	201	100 00	Aug. 18, 1865
66. Victor .....	Propeller.....	1,388	602 10	July 15, 1865
67. Vineland.....	do.....	388	175 00	Oct. 11, 1865
68. Varuna .....	do.....	1,007	322 00	July 24, 1865
69. Vetterlein .....	Tug .....	50	30 00	Nov. 17, 1865
70. Van Vliet, General S.....	do.....	63	45 00	Aug. 22, 1865
71. Verbena .....	Barge .....	102	8 21	Aug. 4, 1865
72. Wyoming No. 1.....	Side-wheel steamer..	359	180 00	Sept. 25, 1865
73. Wyoming No. 2.....	do.....	383	175 00	Feb. 5, 1866
74. Warrior.....	do.....	1,507	678 25	July 28, 1865
75. Western Metropolis .....	do.....	2,269	650 00	July 21, 1865
76. Way, Thomas P.....	do.....	369	100 00	Sept. 16, 1865
77. Webster .....	do.....	1,035	400 00	Oct. 10, 1865
78. Whiting, Catherine.....	do.....	880	282 00	Aug. 16, 1865
79. Washington, Martha.....	do.....	154	85 00	July 6, 1865
80. Wilmington .....	Propeller.....	737	400 00	Aug. 28, 1865

\* In service in Virginia.

† Purchased at above date.

*List of vessels chartered, &c.—Continued.*

Name.	Class.	Tonnage.	Rate per day.	Date of discharge.
381. Whilldin, W.....	Propeller.....	312	\$140 00	Oct. 11, 1865
382. Weybosset.....	.....do.....	810	282 00	Sept. 7, 1865
383. Winans, Amanda.....	.....do.....	257	100 00	Jan. 27, 1866
384. Wimpenny, Sam.....	Screw tug.....	53	65 00	Aug. 27, 1865
385. Wood, A. M.....	.....do.....	30	42 50	Aug. 9, 1865
386. Wallace, Daniel.....	Steam barge.....	126	50 00	July 15, 1865
387. Washington.....	Pilot-boat.....	41	33 33	Dec. 27, 1865
388. Wilder, T. D.....	Schooner.....	297	50 00	March 14, 1866
389. Willis, Ben.....	.....do.....	93	.....	Aug. 7, 1865
390. Wanpona*.....	Barge.....	125	10 36	*Sept. 14, 1865
391. Wadhams, Perry.....	.....do.....	153	12 24	July 30, 1865
392. Warren, Stephen.....	.....do.....	287	55 00	Aug. 14, 1865
393. Youmans, S. H.....	Schooner.....	147	26 67	Sept. 8, 1865
394. Zenobia.....	Propeller.....	824	263 00	Dec. 23, 1865
Total.....	.....	137,006	53,262 84	

\* Purchased at above date.

Correct :

GEO. D. WISE,  
Col. Q. M. Dept., Brevet Brig. Gen., in charge Third Division.



List of vessels owned by the United States employed on ocean and lake service for the fiscal year ending June 30, 1866.

Name.	Class.	Ton- nage.	Date of purchase.	Cost.	Date of sale.	Price received.	Remarks.
1. Augusta .....	Side-wheel steamer..	235	.....	\$80,000	Jan. 15, 1866	.....	Laid up at Baltimore.
2. Achilles .....	do.....	375	Mar. 25, 1864	45,000	.....	.....	.....
3. Alabama .....	do.....	650	Nov. 10, 1863	80,000	Feb. 28, 1866	\$47,000 00	In service at Baltimore.
4. Adams, John .....	do.....	404	.....	.....	.....	.....	.....
5. Alliance .....	Propeller.....	397	.....	60,000	Feb. 2, 1866	25,000 00	.....
6. Albany .....	do.....	227	.....	30,000	Aug. 2, 1865	1,900 00	.....
7. Ashland .....	do.....	837	.....	115,000	Oct. 24, 1865	33,000 00	.....
8. Atlantic .....	Stern-wheel steamer..	10	.....	.....	Oct. 14, 1865	225 00	Captured.
9. Ariel .....	Screw tug.....	46	Dec. 1, 1864	10,000	.....	.....	In service at Washington.
10. Arrow .....	do.....	40	.....	.....	May 9, 1866	1,850 00	Captured.
11. Anita .....	Schooner.....	135	.....	.....	Feb. 2, 1866	3,100 00	.....
12. Anna, of Nassau .....	do.....	134	.....	.....	.....	.....	Wrecked on Texas coast.
13. Adams, Howard D .....	do.....	115	.....	20,000	Feb. 28, 1866	5,600 00	.....
14. America .....	Barge .....	41	Sept. 9, 1864	1,100	Sept. 6, 1865	900 00	.....
15. Audenried, Lewis .....	do.....	131	July 18, 1865	2,400	Oct. 7, 1865	480 00	.....
16. Balloon .....	Side-wheel steamer..	204	Sept. 15, 1864	12,000	Mar. 1, 1866	12,500 00	.....
17. Baker, Nellie .....	do.....	320	.....	44,000	Feb. 6, 1866	17,500 00	.....
18. Belvidere .....	do.....	808	.....	75,000	Nov. 27, 1865	15,000 00	.....
19. Benton, Mary .....	do.....	368	.....	54,000	.....	.....	In service at New York.
20. Burnside, (army gunb't) .....	Propeller.....	220	.....	42,500	Oct. 19, 1865	6,250 00	.....
21. Blakeman, T. E .....	Barge .....	60	June 25, 1864	800	Sept. 6, 1865	400 00	.....
22. Baxter, Wm. M. ....	do.....	110	July 10, 1865	7,500	Aug. 22, 1865	1,030 00	.....
23. Broad Mountain .....	do.....	116	July 27, 1865	1,200	Sept. 6, 1865	300 00	.....
24. Bissel, W. S .....	do.....	134	Nov. 14, 1864	1,200	.....	.....	Abandoned; worthless.
25. Clinton .....	Side-wheel steamer..	721	Aug. 1, 1865	175,000	.....	.....	In service in Texas.
26. Crescent .....	do.....	678	Aug. 1, 1865	160,000	.....	.....	Laid up at New Orleans.
27. City of Albany .....	do.....	450	May 3, 1863	82,000	.....	.....	In service department of Va.
28. Cecil .....	do.....	130	Jan. 29, 1863	12,000	Mar. 1, 1865	2,000 00	.....
29. Curlew .....	do.....	408	Dec. 10, 1861	.....	Nov. 1, 1865	15,500 00	.....
30. Cossack .....	do.....	500	Oct. 18, 1865	50,000	Oct. 24, 1865	50,000 00	.....
31. Cosmopolitan .....	do.....	774	.....	.....	.....	.....	Captured; in service in S. C.
32. Canonius .....	do.....	416	.....	50,000	.....	.....	In service in South Carolina.
33. Croton .....	do.....	396	July 1, 1864	30,000	Dec. 11, 1865	7,000 00	.....
34. Clyde .....	do.....	460	.....	37,500	Dec. 20, 1865	9,650 00	.....

## List of vessels owned by the United States, &amp;c.—Continued.

Name.	Class.	Ton- nage.	Date of purchase.	Cost.	Date of sale.	Price received.	Remarks.
35. Collyer, Thomas .....	Side-wheel steamer..	446	Aug., 1861	\$80,000	.....	.....	Laid up at New York.
36. Commerce .....	Propeller .....	154	.....	14,000	Oct. 19, —	\$1,800 00	.....
37. Convoy .....	do. ....	410	Aug., 1863	80,000	.....	.....	Burnt March, 1866.
38. Corinthian .....	do. ....	396	Dec. 16, 1863	60,000	Feb. 28, 1866	15,000 00	.....
39. Chase, Governor .....	do. ....	746	Mar. 21, 1865	105,000	Oct. 24, 1865	46,000 00	.....
40. Continental .....	do. ....	1,643	Aug. 1, 1864	195,000	Nov. 4, 1865	130,000 00	.....
41. City of Richmond .....	do. ....	444	Dec. 1, 1864	35,000	Aug. 19, 1865	4,700 00	.....
42. Cleveland .....	Tug .....	37	.....	.....	Mar. 24, 1866	2,500 00	.....
43. Cora .....	Schooner .....	.....	.....	.....	.....	.....	.....
44. Cole, F. G. ....	Barge .....	130	Sept. 1, 1864	1,800	Dec. 9, 1865	590 00	.....
45. Connet .....	do. ....	170	.....	2,500	Aug. 31, 1865	120 00	.....
46. Clarkson, T. ....	do. ....	120	July 14, 1865	30,000	Aug. 22, 1865	450 00	.....
47. Coleman, Hunter .....	do. ....	112	July 31, 1865	1,600	Oct. 26, 1865	430 00	.....
48. Cedar Hill .....	do. ....	176	.....	.....	.....	.....	In service in New York.
49. Deford, Ben. ....	Side-wheel steamer..	1,090	Dec. 1, 1864	140,000	Oct. 24, 1865	148,000 00	.....
50. Diamond .....	do. ....	456	Nov. 1, 1864	45,000	Nov. 1, 1865	10,350 00	.....
51. Delaware .....	do. ....	616	.....	.....	Jan. 26, 1866	105 00	.....
52. Davis, Jefferson .....	.....	.....	.....	.....	.....	.....	Hull sold.
53. DeMolay .....	Propeller .....	1,205	.....	200,000	Aug. 19, 1865	88,500 00	Cap'd; turned over to Treas. Dep.
54. Devenney, H. J. ....	do. ....	195	.....	20,000	April 3, 1866	6,800 00	.....
55. Detroit .....	do. ....	393	July 31, 1864	40,000	Oct. 19, 1865	6,000 00	.....
56. Disney, John .....	do. ....	359	May 13, 1865	40,000	Sept. 6, 1865	4,350 00	.....
57. Decatur, Stephen .....	Tug .....	80	.....	24,000	.....	.....	In service in Virginia.
58. Delhymes .....	Barge .....	125	Feb. 1, 1865	3,000	.....	.....	In service at Washington.
59. Delta .....	do. ....	121	June 10, 1865	1,700	Mar. 9, 1866	120 00	.....
60. Emilie .....	Side-wheel steamer..	459	.....	40,000	Mar. 1, 1866	.....	.....
61. Escort .....	do. ....	487	Oct. 18, 1862	80,000	Mar. 1, 1866	26,000 00	.....
62. Empire City .....	do. ....	1,751	.....	175,000	.....	.....	Laid up at New York.
63. Eastern State .....	Propeller .....	350	Dec. 18, 1861	30,000	Nov. 1, 1866	11,100 00	.....
64. Eagle No. 1 .....	do. ....	392	June 16, 1862	25,000	Oct. 19, 1865	3,100 00	.....
65. Exact .....	do. ....	265	.....	32,000	Feb. 28, 1866	4,600 00	.....
66. Emma .....	Tug .....	30	May 9, 1864	2,500	Oct. 14, 1865	575 00	.....
67. Electric .....	Schooner .....	107	.....	9,500	Feb. 2, 1866	6,050 00	.....
68. Evans, Mary E. ....	Barge .....	119	May 26, 1866	1,600	Sept. 6, 1866	290 00	.....

69. Ellis, James L.....	do	194	Aug. 1, 1865	1 200	Sept. 6, 1865	435 00	In service at Washington.
70. Foster (gunboat) .....	Side-wheel steamer..	220	Oct. 3, 1863	42,500	Oct. 19, 1865	4,200 00	
71. Foote.....	Propeller.....	335	Mar. 21, 1865	77,500	Feb. 28, 1866	3,900 00	
72. Farron, John.....	Side-wheel steamer..	250	.....	.....	Mar. 1, 1866	8,500 00	
73. Farmer.....	Propeller.....	185	May 1, 1865	15,000	Sept. 6, 1865	3,100 00	
74. Fisher, Wm.....	Tug.....	63	Nov. 7, 1864	10,000	.....	.....	
75. Freeman, Lizzie .....	do.....	75	.....	28,000	Oct. 14, 1865	2,500 00	
76. Florence.....	Barge.....	122	Aug. 1, 1865	1,600	Oct. 26, 1865	345 00	
77. Financier.....	do.....	135	Oct. 26, 1865	2,000	Feb. 3, 1866	541 00	
78. Flannery, H.....	do.....	129	Sept. 14, 1865	2,500	Oct. 26, 1865	110 00	
79. Forsyth, Fanny .....	do.....	126	July 22, 1865	1,400	Oct. 7, 1865	145 00	
80. Golden Gate.....	Side-wheel steamer..	135	.....	.....	Feb. 6, 1866	6,000 00	
81. Guide.....	do.....	731	Sept., 1861	50,000	Oct. 24, 1865	46,000 00	
82. Garner, Fannie .....	Propeller.....	149	.....	.....	Mar. 1, 1866	3,300 00	
83. Geneva.....	Tug.....	113	.....	.....	.....	.....	Captured; in service in Virginia.
84. Gould, J. R.....	Barge.....	100	.....	.....	.....	.....	In service in Virginia.
85. Hancox, J. W.....	Side-wheel tug .....	345	.....	35,000	.....	.....	In service at New Orleans.
86. Heroine.....	Side-wheel steamer..	293	.....	.....	.....	.....	Transferred to Treas. Ap. 27, '66.
87. Hudson.....	do.....	761	Jan., 1865	80,000	Aug. 19, 1865	7,500 00	
88. Hunter, General .....	do.....	460	.....	80,000	Dec. 11, 1865	24,000 00	
89. Hunter, Woodis .....	do.....	213	.....	30,000	Aug. 2, 1865	8,700 00	
90. Hattie.....	Stern-wheel steamer..	102	.....	.....	May 15, 1866	2,500 00	
91. Huzzar.....	Propeller.....	351	.....	22,500	Feb. 28, 1866	2,100 00	
92. Hortense.....	Schooner.....	18	.....	.....	.....	.....	Captured.
93. Highlander .....	do.....	340	.....	10,875	Feb. 2, 1866	5,650 00	Turned over to Treas. Mar. 8, '66.
94. Harriet.....	do.....	.....	Aug., 1864	7,000	Mar. 29, 1866	43 62	
95. Helena.....	do.....	.....	.....	.....	.....	.....	Cap'd; transferred to Treasury.
96. Houston.....	Barge.....	.....	.....	.....	.....	.....	Cap'd; transferred to Treasury.
97. Henry, James .....	do.....	136	.....	1,200	Sept. 6, 1865	100 00	
98. Hope.....	do.....	120	.....	.....	.....	.....	In service in Virginia.
99. Iolas.....	Side-wheel steamer..	164	.....	18,000	Mar. 21, 1866	1,000 00	
100. Illinois.....	do.....	2,123	July 27, 1865	400,000	.....	.....	In service in New York.
101. Island City.....	do.....	218	.....	23,000	.....	.....	Laid up at Baltimore.
102. Ironsides.....	do.....	200	.....	25,000	Mar. 1, 1865	7,600 00	
103. Ide, John S.....	do.....	185	Jan. 1, 1865	25,000	.....	.....	In service at Washington.
104. Islander .....	do.....	46	Jan. 28, 1865	8,000	.....	.....	In service in Virginia.
105. Jenkins, Hugh .....	do.....	306	.....	12,000	Mar. 1, 1866	4,000 00	
106. Jerome, James .....	do.....	163	Dec. 1, 1864	20,000	Mar. 1, 1866	4,500 00	
107. Jesup, General .....	Side-wheel gunboat..	220	.....	42,500	Oct. 19, 1865	10,500 00	
108. Jennie.....	Tug.....	15	.....	.....	.....	.....	In service at New Orleans.
109. Josephine.....	Propeller.....	254	.....	30,000	Dec. 20, 1865	7,650 00	

## List of vessels owned by the United States, &amp;c.—Continued.

Name.	Class.	Ton- nage.	Date of purchase.	Cost.	Date of sale.	Price received.	Remarks,
110. Jura .....	Barge .....	117	Sept. 1, 1864	\$2,000	.....	.....	In service at Washington.
111. Karnak .....	Propeller .....	960	Nov. 1, 1863	95,000	Oct. 24, 1865	\$68,000 00	
112. Kate .....	Tug .....	35	Sept. 1, 1864	6,000	Mar. 1, 1865	2,300 00	
113. Kate .....	Barge .....	121	.....	2,500	May 18, 1866	2,475 00	
114. Kauffman & Warner .....	do .....	123	.....	1,500	Mar. 9, 1866	300 00	
115. Long Island .....	Side-wheel steamer ..	445	.....	50,000	Aug. 2, 1865	18,000 00	
116. Laura .....	do .....	195	.....	.....	Nov. 27, 1865	11,100 00	
117. Landis .....	do .....	549	.....	.....	Feb. 28, 1866	2,000 00	
118. Lancer .....	do .....	400	Oct. 8, 1861	46,000	Oct. 24, 1865	11,100 00	
119. Lonaconing No. 1 .....	Barge .....	120	.....	.....	Sept. 6, 1865	810 00	
120. Lonaconing No. 2 .....	do .....	100	Mar. 1, 1864	.....	Nov. 16, 1865	1,205 00	
121. Lamb, M. ....	do .....	117	July 10, 1865	.....	Aug. 22, 1865	1,550 00	
122. Locust Mountain .....	do .....	119	Aug. 1, 1865	1,200	Sept. 6, 1865	400 00	Laid up at Baltimore.
123. May Flower .....	Side-wheel steamer ..	350	.....	.....	.....	.....	
124. Manhattan .....	do .....	320	July 30, 1864	25,000	Mar. 1, 1866	2,000 00	
125. Matamoras .....	Recess-wheel steamer ..	.....	May 30, 1864	.....	Feb. 28, 1865	1,200 00	
126. McClellan .....	Side-wheel steamer ..	1,003	Aug. 8, 1861	75,000	.....	.....	Laid up at New York.
127. Morse, Ella .....	do .....	196	— 1864	48,000	.....	.....	In service at New Orleans.
128. Meigs, General .....	Propeller .....	200	Nov. 3, 1864	25,000	Mar. 1, 1866	6,600 00	
129. Meigs, General .....	do .....	329	— 1863	45,000	Oct. 24, 1865	18,500 00	
130. Monitor .....	Tug .....	104	Aug. 1, 1865	15,000	.....	.....	In service at Philadelphia.
131. Macon .....	do .....	80	.....	.....	Dec. 11, 1865	700 00	Captured.
132. Mosswood .....	do .....	143	Nov. 1, 1864	30,000	.....	.....	In service in Virginia.
133. Murray, James .....	do .....	61	Dec. 7, 1863	10,000	Oct. 19, 1865	2,200 00	
134. Mattie .....	Sloop .....	.....	.....	.....	.....	.....	Cap'd; transferred to Treasury.
135. Matchless .....	Schooner .....	170	.....	13,500	.....	.....	In service in Florida.
136. Megan, D. ....	Barge .....	125	Sept. 22, 1864	2,500	Mar. 9, 1866	2,200 00	
137. McCaffrey, Ann .....	do .....	132	July 22, 1865	3,500	Feb. 3, 1866	900 00	
138. Middlesex .....	do .....	124	Feb. 13, 1864	3,000	Dec. 11, 1865	2,700 00	
139. Neptune .....	Side-wheel steamer ..	348	.....	50,000	Oct. 19, 1865	41,000 00	
140. Northerner .....	do .....	650	.....	70,000	Feb. 6, 1866	11,000 00	
141. Nantasket .....	do .....	285	.....	42,000	Feb. 28, 1866	3,700 00	
142. Neaife .....	Tug .....	120	.....	.....	.....	.....	
143. Nonpareil .....	Schooner .....	74	May, 1861	5,000	.....	.....	In service in Florida.

Capt'd; transferred to Treasury  
March 9, 1865.

144. Nightingale .....	do.....	45	Jan. 1, 1865	10,000	Mar. 9, 1865	2,400 00	
145. Onicola.....	Side-wheel steamer..	95	.....	26,000	Feb. 6, 1866	8,500 00	
146. Onyota .....	do.....	293	.....	25,000	Aug. 19, 1865	4,600 00	
147. Osgood, Charles.....	Propeller.....	364	June 28, 1864	3,000	May 18, 1865	355 00	
148. Oneida .....	Barge .....	135	.....	30,000	Mar. 1, 1866	6,100 00	
149. Peconic.....	Side-wheel steamer..	294	.....	16,000	Oct. 19, 1865	3,200 00	
150. Patuxent .....	do.....	265	July, 1864	12,000	Feb. 28, 1865	3,000 00	
151. Philadelphia .....	do.....	179	June, 1864	45,919	Oct. 19, 1865	3,750 00	
152. Parke, (army gunboat)	do.....	220	.....	.....	.....	.....	Captured; in service in S. C.
153. Planter .....	do.....	470	.....	.....	.....	.....	Sunk.
154. Peabody, George.....	do.....	1,017	June, 1863	85,000	Feb. 2, 1866	18,500 00	
155. Planter .....	do.....	323	Jan. 22, 1864	.....	Feb. 2, 1866	9,600 00	
156. Patroon.....	Propeller.....	237	Dec., 1863	20,000	Nov. 10, 1865	.....	
157. Planet .....	do.....	352	May 2, 1864	30,000	Dec. 20, 1865	11,300 00	
158. Porter .....	do.....	335	April 1, 1865	77,500	Feb. 28, 1866	4,100 00	
159. Paige, A. S.....	Tug .....	144	.....	20,000	Sept. 6, 1865	2,700 00	
160. Plato .....	do.....	115	.....	29,500	Jan. 2, 1866	.....	
161. Platt, W. H.....	Barge .....	89	June 10, 1865	1,200	April 3, 1866	200 00	
162. Quartz.....	do.....	115	July 21, 1865	1,800	Sept. 6, 1865	925 00	
163. Reno, (gunboat).....	Side-wheel steamer..	220	.....	42,550	Oct. 19, 1865	3,900 00	
164. Rescue .....	Side-wheel tug.....	228	.....	10,000	Feb. 6, 1866	4,000 00	
165. Relief.....	Tug .....	53	.....	10,000	Feb. 6, 1866	2,650 00	
166. Rice, John .....	Propeller.....	782	.....	100,000	Mar. 22, 1866	24,700 00	In service, Washington.
167. Ranger.....	do.....	600	Oct., 1863	30,000	Oct. 24, 1865	14,500 00	Captured; in service, Savannah.
168. Rucker, Colonel .....	do.....	241	Dec. 1, 1864	30,000	.....	.....	
169. Resolute .....	do.....	.....	.....	.....	.....	.....	
170. Reindeer.....	Side-wheel tug.....	46	Dec., 1863	8,500	July 20, 1865	1,800 00	
171. Reany, W. P.....	Tug .....	94	.....	.....	.....	.....	In service, Key West.
172. Rocketts .....	do.....	60	.....	.....	.....	.....	Captured; in service, Virginia.
173. Ripple.....	Wrecking schooner..	135	.....	20,000	Oct. 19, 1865	4,600 00	
174. Recruit .....	Schooner.....	325	.....	12,000	Oct. 24, 1865	12,200 00	
175. Rescue .....	Barge .....	112	.....	.....	.....	.....	Destroyed by fire, Oct. 21, 1865.
176. Relief.....	do.....	90	.....	.....	.....	.....	Do. do.
177. Reliance .....	do.....	104	.....	.....	.....	.....	In service, Virginia..
178. Reed, Capt. Charles L..	do.....	120	Jan. 1, 1864	1,200	Oct. 26, 1865	245 00	
179. Star .....	Side-wheel steamer..	290	Aug. 28, 1861	.....	Mar. 1, 1866	6,200 00	
180. Spaulding, S. R.....	do.....	1,090	April 20, 1864	140,000	Oct. 24, 1865	155,500 00	
181. Shrapnell, (gunboat)...	do.....	220	.....	18,000	Oct. 19, 1865	2,000 00	
182. Savannah .....	do.....	205	.....	80,000	Nov. 1, 1865	.....	
183. Samson .....	do.....	340	.....	.....	.....	.....	Captured; in service in S. C.

*List of vessels owned by the United States, &c.—Continued.*

Name.	Class.	Ton- nage.	Date of purchase.	Cost.	Date of sale.	Price received.	Remarks.
184. St. Mary.....	Side-wheel steamer..	392	.....	.....	.....	.....	Captured; in service in Florida.
185. St. Mary's.....	do.....	678	Aug. 1, 1865	\$160,000	.....	.....	In service New Orleans.
186. Sumter.....	do.....	.....	.....	.....	.....	.....	Capt'd; transferred to Treasury.
187. St. Helena.....	do.....	275	.....	.....	.....	.....	Captured; in service in Florida.
188. Sedgwick, General.....	Propeller.....	805	.....	125,000	Nov. 27, 1865	\$9,250 00	
189. Standish.....	do.....	109	.....	8,700	Nov. 1, 1865	.....	
190. Sophia.....	do.....	375	.....	30,000	Nov. 27, 1865	4,000 00	
191. Sparks, Thomas.....	do.....	409	.....	30,000	Dec. 20, 1865	10,300 00	
192. Scott, Thomas A.....	do.....	1,052	.....	130,000	Oct. 24, 1865	43,000 00	
193. Stanton.....	do.....	335	Mar. 21, 1865	77,500	Feb. 28, 1866	3,600 00	
194. Shetucket.....	do.....	300	Feb. 1, 1865	25,000	Oct. 24, 1865	4,300 00	
195. Sentinel.....	do.....	350	.....	24,500	Aug. 19, 1865	7,100 00	
196. Stroud, William.....	Tug.....	106	.....	15,000	.....	.....	In service, Boston.
197. Sawtelle, Captain.....	do.....	36	.....	5,000	Mar. 1, 1866	1,700 00	
198. Starlight.....	do.....	78	.....	10,000	Nov. 1, 1865	.....	
199. Skirmisher.....	Schooner.....	234	.....	8,775	.....	.....	Wrecked, October, 1865.
200. Satterly, Colonel.....	do.....	235	.....	14,000	April 30, 1866	1,270 00	
201. Scout.....	do.....	342	.....	12,000	Feb. 28, 1866	650 00	
202. Thomas, C. W.....	Side-wheel steamer..	217	Sept., 1863	48,000	.....	.....	Wrecked.
203. Tracy, John.....	do.....	128	July 19, 1863	18,000	Oct. 14, 1865	4,500 00	In service, New York.
204. Thomas, Charles.....	Propeller.....	1,160	May 9, 1864	140,000	Oct. 24, 1865	66,500 00	
205. Tyro.....	Tug.....	41	Oct. 1, 1863	2,500	.....	.....	In service, Portland.
206. Tigress.....	do.....	49	Sept. 30, 1864	12,000	.....	.....	
207. Three Brothers.....	do.....	47	May 22, 1864	5,000	Mar. 1, 1866	2,400 00	
208. Tamaulipas.....	Stern-wheel steamer..	206	.....	.....	Oct. 14, 1865	1,050 00	
209. Throth, R. W.....	Schooner.....	157	.....	.....	Feb. 28, 1866	20,500 00	
210. Twibill.....	Barge.....	115	June 13, 1865	1,800	Jan. 10, 1866	3,200 00	
211. Undine.....	Side-wheel steamer..	110	May 12, 1864	16,000	Oct. 7, 1865	600 00	
212. Union.....	Schooner.....	112	.....	.....	Oct. 14, 1865	3,700 00	
213. Union.....	Barge.....	127	Oct. 19, 1864	2,972	Mar. 9, 1866	1,625 00	Lost at sea, February, 1866.
214. Vidette.....	Side-wheel steamer..	274	Oct. 19, 1864	17,750	Oct. 19, 1865	4,100 00	
215. Vivian, Alice.....	do.....	269	Feb. 15, 1864	7,000	Jan. 4, 1866	5,000 00	
216. Virginia.....	Propeller.....	440	Dec. 1, 1864	45,000	Aug. 2, 1865	9,400 00	
217. Wawonnock.....	Stern-wheel steamer..	193	June 2, 1864	23,000	Sept. 6, 1865	10,750 00	



Captured; returned to owners,  
December, 1865.

218. Winnisimmet.....	Side-wheel steamer..	276	July 16, 1864	25,000	Nov. 1, 1865	13,000 00
219. Westmoreland.....	.....do.....	350	July, 1864	27,000	Oct. 24, 1865	3,700 00
220. Welles.....	Propeller.....	335	Mar. 21, 1865	77,500	April 3, 1866	4,200 00
221. Whitford, J. A.....	Schooner.....	243	.....	22,000	April 30, 1866	7,050 00
222. Winonah.....	.....do.....	112	.....	.....	Mar. 14, 1866	1,400 00
223. Wilcox, James.....	Barge.....	135	Aug., 1864	2,500	Oct. 26, 1865	745 00
224. Walkill.....	.....do.....	160	.....	.....	June 14, 1866	1,000 00
225. Waupona.....	.....do.....	125	Sept. 14, 1865	1,700	Oct. 26, 1865	210 00
226. Young, W. H.....	Steamer.....	.....	.....	.....	.....	.....
227. Zephyr.....	Side-wheel steamer..	305	.....	36,000	Nov. 27, 1865	7,200 00
228. Zimmerman, Joshua ..	Barge.....	135	Nov. 1, 1864	2,970	Mar. 9, 1866	400 00
Total.....	.....	65,248	.....	6,708,211	.....	1,714,665 62

GEO. D. WISE, Col. Q. M. Dept.,  
Brevet Brigadier General, in charge Third Division.

*Report of property sold pertaining to the third division Quartermaster General's office, ocean and lake transportation, for the fiscal year ending June 30, 1866.*

Name.	Class.	Value.	Amount received from sale.	Expenses of sale.	Date of sale.	Place where sold.
W. Baxter .....	Barge .....	Unknown.	\$1,030 00	\$115 13	Aug. 22, 1865	N. Y. city.
M. Lamb .....	do .....	do .....	1,550 00			
T. Clarkson .....	do .....	do .....	450 00			
City of Richmond .....	Propeller .....	do .....	4,700 00	987 20	Aug. 19, 1865	N. Y. city.
De Molay .....	do .....	do .....	88,500 00			
Sentinel .....	do .....	do .....	7,100 00			
Charles Osgood .....	do .....	\$16,086 25	4,600 00			
Hudson .....	S. w. st'r .....	Unknown.	7,500 00			
1 steamboat bell, 478 lbs .....	do .....	do .....	155 35	273 96	Oct. 19, 1865	N. Y. city.
3 anchors, 1,855 lbs .....	do .....	do .....	185 50			
Chain cable, 4,254 lbs .....	do .....	do .....	249 92			
1 lot steering wheels .....	do .....	do .....	5 00			
3 iron davits, 430 lbs .....	do .....	do .....	15 05			
Deck stanchion, 183 lbs .....	do .....	do .....	3 89			
2 iron windlasses, 1,570 lbs .....	do .....	do .....	47 10			
Machinery, 108,890 lbs .....	do .....	do .....	2,795 40			
Donkey engine and pump .....	do .....	do .....	362 50			
Buckets and arms .....	do .....	do .....	12 00			
Ben Deford .....	Steamer .....	do .....	148,000 00	5,769 75	Oct. 24, 1865	N. Y. city.
S. R. Spaulding .....	do .....	do .....	155,000 00			
Guide .....	do .....	do .....	46,000 00			
Westmoreland .....	do .....	do .....	3,700 00			
Cossack .....	do .....	do .....	50,000 00			
General Meigs .....	do .....	do .....	18,500 00			
Karnak .....	do .....	do .....	68,000 00			
Ashland .....	do .....	do .....	38,000 00			
Thomas A. Scott .....	do .....	do .....	43,000 00			
Shetucket .....	do .....	do .....	4,300 00			
Ranger .....	do .....	do .....	14,500 00			
Governor Chase .....	do .....	do .....	46,000 00			
Charles Thomas .....	do .....	do .....	66,500 00			
Lancer .....	do .....	do .....	11,100 00		Nov. 4, 1865	N. Y. city.
Recruit .....	Schooner .....	do .....	12,200 00			
Continental .....	do .....	154,360 41	130,000 00	12 71	Nov. 14, 1865	N. Y. city.
3 lengths hose, 150 feet .....	do .....	Unknown.	13 00			
3 galley pipes .....	do .....	do .....	1 00			
8 iron davits, 2,772 lbs .....	do .....	do .....	128 20			
19 tackle blocks .....	do .....	do .....	20 00			
1 cylinder .....	do .....	do .....	80 00			
17 life preservers .....	do .....	do .....	1 44			
3 sails .....	do .....	do .....	108 78			
1 caboose .....	do .....	do .....	17 53			
69 water buckets .....	do .....	do .....	30 36			
3,038 lbs. steam pipe .....	do .....	do .....	143 52			
2,372 lbs. anchor chain .....	do .....	do .....	75 17			
1,201 water casks .....	do .....	do .....	604 75			
2 boats .....	do .....	do .....	40 00			
12 dead lights, 190 lbs .....	do .....	do .....	41 80			
7 lengths hose, 350 feet .....	do .....	do .....	90 00			
21 anchors, 5,953 lbs .....	do .....	do .....	424 07			
105 rings, bolts, and nuts .....	do .....	do .....	66 68			
3 slice bars .....	do .....	do .....	36 00			
3 galley hooks .....	do .....	do .....	21 00			
2 anchor chains, 2,472 lbs .....	do .....	do .....	89 61			
15,019 lbs. rope .....	do .....	do .....	2,018 50			
5,468 lbs. chain .....	do .....	do .....	273 40			
1 windlass .....	do .....	do .....	15 00			
1 boat, 21 oars .....	do .....	do .....	5 00			
1 deck fall .....	do .....	do .....	12 00	405 10	Feb. 7, 1866	N. Y. city.
1 iron deck .....	do .....	do .....	18 33			
2,000 lbs. steam pipe .....	do .....	do .....	75 00			
1,000 lbs. grate bars .....	do .....	do .....	37 50			
1 bowsprit .....	do .....	do .....	6 92			
15 life-boats .....	do .....	do .....	613 50			
1 caboose .....	do .....	do .....	10 50			
24 sections chain, 37,834 lbs .....	do .....	do .....	1,182 31			
8 binnacles and compasses .....	do .....	do .....	100 25			
3 pillow blocks .....	do .....	do .....	63 00			
11 speaking trumpets .....	do .....	do .....	15 40			
19 volumes on navigation .....	do .....	do .....	19 50			
sorted flags .....	do .....	do .....	59 20	Unknown.		
ners .....	do .....	do .....	24 00	do .....	Feb. 7, 1866	N. Y. city.
rts .....	do .....	do .....	85 40	do .....	Feb. 7, 1866	N. Y. city.

## Report of property sold, &amp;c.—Continued.

Name.	Class.	Value.	Amount received from sale.	Expenses of sale.	Date of sale.	Place where sold.
6 parallel rules		Unknown.	\$42 50	Unk'n.	Feb. 7, 1866	N. Y. city.
1 hydrometer		do.		do.	Do.	
10 thermometers		do.		do.	Do.	
4 minute glasses		do.		do.	Do.	
2 salinometers		do.		do.	Do.	
1 salinometer pot		do.		do.	Do.	
2 marine glasses		do.		do.	Do.	
12 glass tubes		do.		do.	Do.	
1 steam indicator		do.		do.	Do.	
9 spy-glasses		do.		do.	Do.	
7 quadrants		do.		do.	Do.	
20 marine compasses		do.		do.	Do.	
6 telltale compasses		do.		do.	Do.	
7 barometers		do.		do.	Do.	
175 signal flags		do.		do.	Do.	
150 life-preservers		do.		do.	Do.	
5 medical chests and contents		do.	32 50	do.	Do.	
John Rice	Steamer.	do.	24,700 00	\$331 75	Mar. 22, 1866	
234 water casks		do.	257 40		Do.	
Boiler of steamer H. A. Weed		do.	465 00	33 34	Do.	
2 shafts steamer Delaware		do.	490 00		Do.	
35,628 lbs. rope		do.	5,252 54		Do.	
408 blocks, assorted		do.	828 20	431 27	Do.	
76 fine brushes		do.	77 90		Do.	
9,000 deck plugs		do.	2 75		Do.	
1 pennant		do.	1 32		Do.	
2 barometers		do.	13 00		Do.	
2 steam gauges		do.	6 75		Do.	
1 spirit compass		do.	13 00		Do.	
1,238 lbs. rope		do.	6 75		Do.	
17 sails, 2,710 lbs.		do.	13 00		Do.	
1 davit, 387 lbs		do.	71 18		Do.	
47 water casks		do.	471 27	21 33	May 11, 1866	
100 feet hose and couplings		do.	18 25		Do.	
3 ship bells, 1,113 lbs		do.	45 91			
2 spars		do.	2 75			
50 tackle blocks		do.	8 25			
Jno. Twibell	Barge	do.	600 00		Oct. 7, 1865	Philadelphia.
Audenried	do.	do.	480 00	28 59	do.	Do.
Fanny Forryth	do.	do.	145 00		do.	Do.
250 lbs. cable chain		do.	1,451 23		Jan. 29, 1866	Do.
Osteola	Steamer	do.	2,400 00		March 9, 1866	Do.
Delta	Barge	do.	120 00		do.	Do.
Kauffman & Warner	do.	do.	300 00		do.	Do.
Josiah Zimmerman	do.	do.	400 00		do.	Do.
Union	do.	do.	1,625 00	23 84	do.	Do.
Ann McCaffrey	do.	do.	2,200 00		do.	Do.
H. J. Devinney	Propeller	do.	6,800 00		April 3, 1866	Do.
Welles	Ferry-boat	do.	4,200 00	23 84	do.	Do.
4 metallic life-boats		do.	51 50		June 25, 1866	Do.
W. H. Platt	Barge	do.	200 00		April 3, 1866	Do.
Jefferson	St'm f'y b't.	\$15,000 00	17,000 00	165 00	Nov. 8, 1865	Boston.
Virginia	Propeller	Unknown.	9,400 00	25 00	Aug. 2, 1865	Baltimore.
Hunter Woodis	S. w. st'mr.	do.	8,700 00	25 00	do.	Do.
Long Island	do.	do.	18,500 00	25 00	do.	Do.
Albany	Propeller	do.	1,900 00	25 00	do.	Do.
W. S. Bissell	Barge	1,200 00		25 00	do.	Do.
Eagle No. 1	S. w. st'mr.	25,000 00	3,100 00	25 00	Oct. 19, 1865	Do.
Patuxent	do.	Unknown.	3,200 00	25 00	do.	Do.
Northerner	do.	do.	41,000 00	25 00	do.	Do.
James Murray	Screw-tug	10,000 00	2,200 00	25 00	do.	Do.
Vidette	Propeller	Unknown.	4,100 00	25 00	do.	Do.
Commerce	do.	do.	1,800 00	25 00	do.	Do.
Detroit	do.	do.	6,000 00	25 00	do.	Do.
Shrapnell	S. w. st'mr.	do.	2,000 00	25 00	do.	Do.
Gen. Jesup	do.	do.	10,500 00	25 00	do.	Do.
Reno	do.	do.	3,900 00	25 00	do.	Do.
Poster	do.	42,500 00	4,200 00	25 00	do.	Do.
Parke	do.	45,919 00	3,750 00	25 00	do.	Do.
Burnside	do.	45,919 00	6,250 00	25 00	do.	Do.
Diamond	do.	Unknown.	10,350 00	25 00	Nov. 1, 1865	Do.
Winniesimmet	do.	Unknown.	13,000 00	25 00	do.	Do.
Curlew	do.	do.	15,500 00	25 00	do.	Do.
Eastern State	Propeller	30,000 00	11,100 00	25 00	do.	Do.

\* The valuation of this steamer on the 7th of May, 1864, the date of her entry into service by her charter party, was \$60,000. She was worth at the time of sale not over \$15,000, but, owing to spirited competition between rival ferry companies, brought \$17,000.

## Report of property sold, &amp;c.—Continued.

Name.	Class.	Value.	Amount received from sale.	Expenses of sale.	Date of sale.	Place where sold.
Escort.....	S. w. st'mr.	Unknown.	\$26,000 00	25 00	March 1, 1865	Baltimore.
Manhattan.....	do.	do.	2,000 00	25 00	do.	Do.
John Farron.....	do.	do.	8,500 00	25 00	do.	Do.
Peconic.....	do.	\$30,000 00	6,100 00	25 00	do.	Do.
Hugh Jenkins.....	do.	Unknown.	4,000 00	25 00	do.	Do.
Star.....	do.	do.	6,200 00	25 00	do.	Do.
Balloon.....	do.	12,000 00	12,500 00	25 00	do.	Do.
Iolas.....	do.	18,000 00	1,000 00	25 90	do.	Do.
James Jerome.....	Propeller.	20,000 00	4,500 00	25 00	do.	Do.
Cecil.....	S. w. st'mr.	12,000 00	2,000 00	25 00	do.	Do.
L. G. Cannon.....	Propeller.	25,000 00	6,600 00	25 00	do.	Do.
Ironsides.....	do.	Unknown.	7,600 00	25 00	do.	Do.
Fanny Garner.....	do.	12,000 00	3,300 00	25 00	do.	Do.
Tigress.....	Steam tug.	12,000 00	2,400 00	25 00	do.	Do.
Kate.....	do.	6,000 00	2,300 00	25 00	do.	Do.
C. G. Sawtelle.....	do.	Unknown.	1,700 00	25 00	do.	Do.
Iron Rudder.....	do.	do.	57 00	do.	do.	Do.
Boiler and Q. M. stores.....	do.	do.	9,549 40	do.	do.	Do.
Farmer.....	Steamer.	15,000 00	3,100 00	do.	Sept. 6, 1865	Washington.
John Disney.....	do.	40,000 00	4,350 00	do.	do.	Do.
Reindeer.....	do.	8,500 00	1,800 00	do.	July 20, 1865	Do.
Wawenock.....	do.	23,000 00	10,750 00	do.	Sept. 6, 1865	Do.
A. S. Paige.....	Tug.	20,000 00	2,700 00	do.	do.	Do.
America.....	Barge.	1,100 00	900 00	do.	do.	Do.
Broad Mountain.....	do.	1,200 00	300 00	do.	do.	Do.
Captain C. L. Reed.....	do.	1,200 00	245 00	do.	Oct. 26, 1865	Alexandria.
F. E. Blakeman.....	do.	800 00	400 00	do.	Sept. 6, 1865	Washington.
Florence.....	do.	1,600 00	345 00	do.	Oct. 26, 1865	Alexandria.
Financier.....	do.	1,700 00	541 00	do.	Feb. 3, 1866	Washington.
Hunter Coleman.....	do.	1,600 00	430 00	do.	Oct. 26, 1865	Alexandria.
Henry Flannery.....	do.	2,500 00	110 00	do.	do.	Do.
James Henry.....	do.	1,200 00	100 00	do.	Sept. 6, 1865	Washington.
James L. Ellis.....	do.	1,200 00	435 00	do.	do.	Do.
James Wilcox.....	do.	2,500 00	745 00	do.	Oct. 26, 1865	Alexandria.
Lonaconing No. 1.....	do.	Unknown	810 00	do.	Sept. 6, 1865	Washington.
Lonaconing No. 2.....	do.	do.	1,205 00	do.	Nov. 16, 1865	Alexandria.
Locust Mountain.....	do.	1,200 00	400 00	do.	Sept. 6, 1865	Washington.
Mary E. Evans.....	do.	1,600 00	290 00	do.	do.	Do.
Middlesex.....	do.	Unknown	900 00	do.	Feb. 3, 1866	Do.
Quartz.....	do.	1,800 00	925 00	do.	Sept. 6, 1865	Do.
T. G. Cole.....	do.	1,800 00	590 00	do.	Dec. 9, 1865	Alexandria.
Wapouza.....	do.	1,700 00	210 00	do.	Oct. 26, 1865	Do.
Protector.....	Schooner.	Unknown	1,000 00	Unknown	Aug. 25, 1865	Fort Monroe.
Comet.....	Barge.	do.	120 00	do.	Aug. 31, 1865	Do.
150 water casks.....	do.	do.	5 00	do.	Sept. 15, 1865	Do.
664 brooms.....	do.	do.	3 75	do.	do.	Do.
3 hose couplings.....	do.	do.	2 00	do.	do.	Do.
4 boat flags.....	do.	do.	5 50	do.	do.	Do.
170 feet gutta-percha hose.....	do.	do.	3 50	do.	do.	Do.
8 sails.....	do.	do.	65 45	do.	do.	Do.
7 cork fenders.....	do.	do.	10	do.	do.	Do.
248 lanterns.....	do.	do.	2 25	do.	do.	Do.
19 life preservers.....	do.	do.	1 35	do.	do.	Do.
18 oars.....	do.	do.	5 00	do.	do.	Do.
6,414 pounds rope.....	do.	do.	320 00	do.	do.	Do.
7 cook stoves.....	do.	do.	14 47	do.	do.	Do.
Emma.....	S. w. st'm'r	do.	575 00	do.	Oct. 14, 1865	Norfolk.
John Tracy.....	do.	do.	4,500 00	do.	do.	Do.
Undine.....	do.	do.	3,700 00	do.	do.	Do.
Lizzie Freeman.....	Tug.	do.	2,500 00	do.	do.	Do.
Three Brothers.....	S. W. st'm'r.	do.	1,050 00	do.	do.	Do.
Atlantic.....	do.	do.	225 00	do.	do.	Do.
14 launch boats.....	do.	do.	950 00	do.	Nov. 27, 1865	Fort Monroe.
1 steamboat hull.....	do.	do.	925 00	do.	Nov. 28, 1865	Do.
71 brooms.....	do.	do.	25	do.	do.	Do.
50 scrub brushes.....	do.	do.	2 00	do.	do.	Do.
80 water buckets.....	do.	do.	7 00	do.	do.	Do.
3 hand pumps.....	do.	do.	2 00	do.	do.	Do.
1 marine compass.....	do.	do.	1 00	do.	do.	Do.
1 barometer.....	do.	do.	50	do.	do.	Do.
1 thermometer.....	do.	do.	50	do.	do.	Do.
2 flags.....	do.	do.	2 00	do.	do.	Do.
1 scale and weights.....	do.	do.	1 00	do.	do.	Do.
20 paint brushes.....	do.	do.	3 00	do.	do.	Do.
60 water casks.....	do.	do.	3 25	do.	do.	Do.
res and helves.....	do.	do.	18 00	do.	do.	Do.

## Report of property sold, &amp;c.—Continued.

Name.	Class.	Value.	Amount received from sale.	Expenses of sale.	Date of sale.	Place where sold.
4 grindstones and fixtures		Unknown	\$3 00	Unknown	Nov. 28, 1865	Fort Monroe.
3 signal lamps		do.	2 00	do.	do.	Do.
42 lanterns		do.	5 00	do.	do.	Do.
1 steam gauge		do.	50	do.	do.	Do.
42 blocks		do.	22 50	do.	do.	Do.
9 water barrels		do.	10	do.	do.	Do.
2 metallic boats		do.	16 00	do.	do.	Do.
2 ship boats		do.	11 00	do.	do.	Do.
50 feet rubber hose		do.	9 00	do.	do.	Do.
11 cant hooks		do.	9 90	do.	do.	Do.
12 paulins		do.	36 54	do.	do.	Do.
7 lamps		do.	20	do.	do.	Do.
12 oilers		do.	10	do.	do.	Do.
2 oil feeders		do.	10	do.	do.	Do.
7 tin cans		do.	10	do.	do.	Do.
1 ship bell		do.	52 50	do.	do.	Do.
2,750 pounds rope		do.	254 38	do.	do.	Do.
9 taps		do.	25	do.	do.	Do.
1 iron rake		do.	25	do.	do.	Do.
6 coal barrows		do.	12 00	do.	do.	Do.
18 coal tubs		do.	4 12	do.	Jan. 21, 1866	Do.
12 car axles		do.	15 75	do.	do.	Do.
24 car wheels		do.	64 22	do.	do.	Do.
1,114 pounds rope		do.	43 15	do.	do.	Do.
2 iron pots		do.	25	do.	do.	Do.
11 lanterns		do.	2 00	do.	do.	Do.
2 marine compasses		do.	1 00	do.	do.	Do.
91 water buckets		do.	5 00	do.	do.	Do.
1 boat flag		do.	1 00	do.	do.	Do.
6 whitewash brushes		do.	5	do.	do.	Do.
9 wharf lamps		do.	3 00	do.	do.	Do.
10 bake-ovens		do.	9 60	do.	do.	Do.
10 lamps		do.	2 00	do.	do.	Do.
36 brooms		do.	4 25	do.	do.	Do.
7 sheepskins		do.	1 00	do.	do.	Do.
3 lighters		do.	144 00	do.	do.	Do.
Lighters and floating dock		do.	35 00	do.	do.	Richmond.
34 mess chests		do.	36 80	do.	Feb. 23, 1866	Fort Monroe.
650 feet hose		do.	9 00	do.	do.	Do.
51 stoves		do.	37 04	do.	do.	Do.
29 shovels		do.	3 77	do.	do.	Do.
1 iron pump		do.	50	do.	do.	Do.
24 mattresses		do.	111 60	do.	do.	Do.
2 bolystones		do.	20	do.	do.	Do.
2 water coolers		do.	3 50	do.	do.	Do.
3 oil tanks		do.	13 50	do.	do.	Do.
25 capstan bars		do.	1 00	do.	do.	Do.
144 thimbles		do.	2 16	do.	do.	Do.
42 blocks		do.	13 65	do.	do.	Do.
176 mast hoops		do.	4 00	do.	do.	Do.
30 paint brushes		do.	10	do.	do.	Do.
18 scow shovels		do.	54	do.	do.	Do.
18 chairs		do.	90	do.	do.	Do.
205 hangs for sails		do.	1 03	do.	do.	Do.
170 water barrels		do.	84 60	do.	do.	Do.
1 shaft		do.	58 00	do.	do.	Norfolk.
1 shaft		do.	43 00	do.	do.	Do.
1 pump		do.	125 00	do.	do.	Do.
2 boilers		do.	410 00	do.	do.	Do.
1 gearing		do.	15 00	do.	do.	Do.
2 cylinders		do.	79 50	do.	do.	Do.
1 wheel		do.	8 66	do.	do.	Do.
1 walking-beam		do.	45 00	do.	do.	Do.
1 engine		do.	253 00	do.	do.	Do.
22,569 pounds iron		do.	182 00	do.	do.	Do.
Col. Satterly	Schooner	do.	1,270 00	do.	April 30, 1866	Do.
Julia E. Whitford	do	do.	7,050 00	do.	do.	Do.
Kate	Barge	do.	2,475 00	do.	May 18, 1866	Fort Monroe
Onaida	do	do.	355 00	do.	May 2, 1866	Do.
4 rudders		do.	3 00	do.	do.	Do.
124 blocks		do.	19 84	do.	do.	Do.
16 calking irons		do.	4 00	do.	do.	Do.
101 oars		do.	17 00	do.	do.	Do.
2 anchors		do.	7 35	do.	do.	Do.
700 deck plugs		do.	25	do.	do.	Do.
45 water casks		do.	4 00	do.	do.	Do.

## Report of property sold, &amp;c.—Continued.

Name.	Class.	Value.	Amount received from sale.	Expenses of sale.	Date of sale.	Place where sold.
1 metallic life-boat .....		Unknown.	\$20 00	Unknown.	May 2, 1866	Fort Monroe.
1 patent log and head .....		do.	2 00	do.	do.	Do.
Arrow .....	Steamboat.	do.	1,850 00	do.	May 9, 1866	Norfolk.
Wallkill .....	Barge	do.	1,000 00	do.	May 14, 1866	Ft. Monroe.
2 wharves .....		do.	195 00	do.	May 12, 1866	Yorktown.
General Hunter .....	Steamer	do.	24,000 00	do.	Dec. 11, 1865	Hilton Head.
Croton .....	do	do.	7,000 00	do.	do.	Do.
Macon .....	do	do.	700 00	do.	do.	Do.
Neptune .....	do	do.	2,700 00	do.	do.	Do.
Golden Gate .....	do	do.	6,000 00	\$1,179 14	Feb. 6, 1866	Do.
Oneota .....	do	do.	8,500 00			
Nantasket .....	do	do.	11,000 00			
Rescue .....	do	do.	4,000 00			
Relief .....	do	do.	2,650 00			
Nelly Baker .....	do	do.	17,500 00	Unknown.	June 26, 1866	Jacksonville.
Hull of steamer Delaware* ..	do	do.	105 00			
Harriet and anchor† .....	Schooner	do.	43 60	3 38	Mar. 29, 1866	Key West.
1 sloop boat‡ .....		do.	10 00	Unknown.	do.	St. Mark's.
5 row-boats and rudders .....		do.	33 00	do.	do.	Do.
Hattie .....	Steamer	do.	2,500 00	do.	June 20, 1866	Jacksonville.
2 wharves .....		do.	220 00	do.	May 15, 1866	Do.
Belvidere .....	Steamer		15,000 00	do.	Nov. 27, 1865	New Orleans.
Planter .....	do	\$15,000 00	9,600 00	do.	do.	Do.
General Sedgwick .....	do	5,000 00	9,250 00	do.	do.	Do.
Zephyr .....	do	Unknown.	7,200 00	do.	do.	Do.
Laura .....	do	do.	11,100 00	do.	do.	Do.
Sophia .....	do	5,000 00	9,650 00	do.	do.	Do.
Clyde .....	do	12,000 00	4,000 00	do.	Dec. 20, 1865	Do.
Huzzar .....	do	6,500 00	2,100 00	do.	Feb. 28, 1866	Do.
Josephine .....	do	9,500 00	7,650 00	do.	Dec. 20, 1865	Do.
Alliance .....	do	27,500 00	2,500 00	do.	do.	Do.
Planet .....	do	14,000 00	11,300 00	do.	do.	Do.
Thomas Sparks .....	do	8,500 00	10,300 00	do.	do.	Do.
Exact .....	do	20,000 00	4,600 00	do.	Feb. 28, 1866	Do.
Alice Vivian .....	do	7,000 00	5,000 00	do.	Jan. 4, 1866	Do.
George Peabody .....	do	23,000 00	18,500 00	do.	Feb. 2, 1866	Do.
Foote .....	do	Unknown.	3,900 00	do.	Feb. 28, 1866	Do.
Philadelphia .....	do	do.	3,000 00	do.	do.	Do.
Stanton .....	do	do.	3,600 00	do.	do.	Do.
Porter .....	do	do.	4,100 00	do.	do.	Do.
Corinthian .....	do	27,500 00	15,000 00	do.	do.	Do.
Alabama .....	do	57,500 00	47,000 00	do.	do.	Do.
Neafie .....	Tug	8,000 00	3,700 00	do.	Jan. 4, 1866	Do.
Cleveland .....	do	Unknown.	2,500 00	do.	do.	Do.
R. W. Troth .....	Schooner	3,000 00	3,200 00	do.	Jan. 11, 1866	Do.
Anita .....	do	4,000 00	3,100 00	do.	Feb. 2, 1866	Do.
Highlander .....	do	6,500 00	5,650 00	do.	do.	Do.
Electric .....	do	Unknown.	6,050 00	do.	do.	Do.
H. D. Adams .....	do	do.	5,600 00	do.	Feb. 28, 1866	Do.
Scout .....	do	do.	650 00	do.	do.	Do.
Anna of Nassau .....	do	do.	do.	do.	do.	Do.
Landis .....	Tug	do.	2,000 00	do.	do.	Do.
Matamoras .....	Steamer	do.	1,200 00	do.	do.	Do.
Ripple .....	Schooner	20,000 00	4,600 00	do.	Oct. 19, 1865	Do.
Tamaulipas .....	Steamer	Unknown.	20,500 00	do.	Feb. 28, 1866	Do.
Winona .....	Schooner	do.	14,000 00	do.	Mar. 14, 1866	Do.
Total .....		941,684 66	1,767,844 69	10,859 38		

Sunk.

† Wrecked and on shore.

‡ Old and worn.

§ Estimated.

GEO. D. WISE, Col. Q. M. Dep't,  
Bvt. Brig. Gen'l, in charge Third Division.



No.	Name of vessel.	Class.	Ton'go.	Estimated value.	When captured.	Where captured.	Remarks.
1	Arrow .....	Tug .....	40	.....	.....	.....	Sold at auction.
2	Anglo American .....	do.....	.....	.....	.....	.....	
3	Atlantic .....	do.....	10	.....	.....	.....	
4	Arab .....	Schooner .....	.....	.....	.....	.....	
5	Anna Maria .....	do.....	25	.....	.....	.....	
6	Beauregard.....	Side-wheel steamer..	184	\$7,000	Feb. 18, 1865...	Ashley river, S. C .....	Raised and turned over to Treasury Dep't.
7	Boston .....	do.....	249	8,000	do.....	do.....	Do.
8	Boston .....	do.....	616	.....	April 13, 1863 .....	.....	
9	Banks, General .....	do.....	.....	.....	.....	.....	
10	Boushee .....	do.....	.....	.....	.....	.....	Blockade-runner.
11	Burnside .....	Schooner.....	75	1,000	.....	Croatan sound, N. C .....	Raised.
12	Burroughs .....	do.....	20	1,000	.....	do.....	Do.
13	Bennett, Colonel .....	Side-wheel steamer..	.....	2,000	Feb. 18, 1865...	Charleston, S. C.....	Turned over to Treasury Department.
14	Caldwell .....	do.....	.....	2,000	do.....	do.....	Do.
15	Creole .....	do.....	.....	.....	May, 1862 .....	New Orleans, La.....	Sold at New Orleans, September, 1865.
16	Carr, John F .....	do.....	.....	.....	July 9, 1865 .....	Matagorda bay, Texas .....	Useless—turned over to Treasury Department, December 27, 1860.
17	Cornie .....	Stern-wheel steamer.	69	.....	May, 1863 .....	Mississippi river .....	Loyal owner—paid value of.
18	De Kalb .....	Side-wheel steamer..	454	5,000	Feb. 18, 1865...	Charleston, S. C.....	Turned over to Treasury Department.
19	Darlington .....	do.....	300	.....	.....	.....	
20	Davis, Jeff .....	Stern-wheel steamer.	350	12,000	Dec., 1864.....	Savannah, Ga .....	Turned over to Treasury Department.
21	Diana .....	Side-wheel steamer..	300	.....	June 24, 1865 .....	Galveston, Texas .....	Surrendered—turned over to Treasury Department, December 27, 1865.
22	Dixie.....	Schooner.....	100	.....	.....	Roanoke island, N. C .....	Sold.
23	Emma.....	Side-wheel steamer..	.....	.....	July, 1863 .....	At sea .....	Captured by chartered steamer Arago.
24	Ellis, Isabella .....	Schooner.....	100	.....	.....	Newbern, N. C .....	Raised.
25	Francis, Mary.....	Side-wheel steamer..	167	5,000	Feb. 18, 1865...	Charleston, S. C.....	Turned over to Treasury Department.
26	Fox .....	do.....	.....	.....	.....	.....	
27	Geneva .....	Tug .....	113	5,000	May, 1862 .....	Norfolk, Va .....	In service on James river.
28	Gould, James R .....	Barge .....	100	500	do.....	do.....	In service at Fort Monroe.
29	Gideon .....	Schooner .....	60	.....	.....	.....	
30	Hibben, James .....	Side-wheel steamer..	69	1,500	Feb. 18, 1865...	Charleston, S. C.....	Turned over to Treasury Department.
31	Hagens, Henry .....	do.....	24	1,500	do.....	do.....	Do.
32	Hope.....	Barge .....	124	500	May, 1862 .....	Norfolk, Va.....	In service at Fort Monroe.

## Statement of vessels pertaining to ocean and lake transportation, &amp;c.—Continued.

No.	Name of vessel.	Class.	Ton'ge.	Estimated value.	When captured.	Where captured.	Remarks.
33	Heroine.....	Side-wheel st'mship.	293	.....	May 2, 1865....	Tombigbee river, Ala...	Property of rebel navy—turned over to Treasury Department.
34	Hortense.....	Schooner.....	18	.....	Aug., 1862.....	New Orleans, La.....	Turned over to Treasury Department, March 8, 1866.
35	Hurt, A. P.....	Side-wheel steamer..	.....	.....	March 11, 1865 .	Fayetteville, N. C.....	Returned to loyal owner, August 5, 1865.
36	Hill, Mary.....	.....do.....	236	.....	June 18, 1865....	Galveston, Texas.....	Lost November 22, 1865, by sinking; surrendered by owner.
37	Houston.....	Barge.....	.....	.....	July 26, 1865....	.....do.....	Surrendered.
38	Hattie.....	Side-wheel steamer..	50	.....	.....	.....	Sold.
39	Helena.....	Schooner.....	40	.....	.....	.....	Turned over to Treasury Department.
40	Island City.....	Side-wheel steamer..	357	.....	June 18, 1865....	Savannah river, Ga...	Surrendered by owner.
41	Macon.....	Propeller.....	.....	.....	.....	.....do.....	Sold December 11, 1865, at Hilton Head, South Carolina.
42	Mary.....	Side-wheel steamer..	.....	.....	May 2, 1865....	Tombigbee river, Ala...	Turned over to Treasury Department, March 8, 1866.
43	Margaret & Jessie.	.....do.....	.....	.....	Nov. 5, 1865....	Off Wilmington, N. C.	Blockade-runner; captured by chartered steamer Fulton.
44	Mattie.....	Sloop.....	.....	.....	July 4, 1865....	Galveston, Texas.....	Surrendered by owner.
45	Neptune or Cæsar .	Side-wheel steamer..	400	\$1,500	June 30, 1865....	Ashley river, S. C.....	Turned over to owner, June 30, 1865.
46	Neafie.....	Tug.....	120	.....	June, 1862.....	Pensacola, Fla.....	Found sunk; sold February 28, 1866.
47	North Carolina....	Side-wheel steamer..	.....	.....	March 11, 1865..	Fayetteville, N. C.....	Returned to loyal owner, August 7, 1865.
48	North State.....	Stern-wheel steamer.	80	2,000	March 15, 1862..	Newbern, N. C.....	.....
49	Nightingale.....	Schooner.....	45	.....	.....	.....	Transferred to Treasury Department.
50	Planter.....	Side-wheel steamer..	470	25,000	.....	.....	In service Freedmen's Bureau.
51	Parker, John H....	.....do.....	.....	.....	April, 1865....	Richmond, Va.....	Turned over to Treas. Dep't, June 7, 1865.
52	Planter.....	Schooner.....	.....	.....	.....	.....	.....
53	Resolute.....	Tug.....	200	20,000	Dec. 12, 1864....	Savannah river.....	In service at Savannah, Georgia.
54	Rocketts.....	.....do.....	60	3,000	April 4, 1865....	Richmond, Va.....	In service at Richmond, Virginia.
55	Red Gauntlet.....	Side-wheel steamer..	.....	.....	May 2, 1865....	Tombigbee river, Ala...	Turned over to Treasury Department, March 8, 1866.
56	Russell, Charles ..	Schooner.....	.....	.....	June 24, 1865....	Galveston, Texas.....	Returned to owner, December 16, 1865.
57	Seaboard.....	Tug.....	.....	.....	.....	Jamez river.....	Raised; owned by rebel navy.
58	Stingaree.....	Schooner.....	.....	.....	July 1, 1865....	Galveston, Texas.....	Returned to owner, December 18, 1865, (found abandoned.)

59	Ht. Charles.....	Slide-wheel.....	264	.....	.....	.....	.....	Surrendered by owner; turned over to Treasury Department, December 27, 1865.
60	Sumter.....	.....	.....	.....	June 18, 1865.....	Galveston, Texas.....	.....	Formerly called Beauregard; in service Freedmen's Bureau.
61	Steele, Colonel.....	Slide-wheel.....	264	.....	.....	.....	.....	In service quartermaster's department.
62	St. Helena.....	.....do.....	275	.....	Dec., 1864.....	Savannah, Ga.....	.....	Do.
63	St. Mary's.....	.....do.....	393	60,000	.....	St. John's river, Fla.....	.....	Found abandoned; turned over to Treasury Department, December 27, 1865.
64	Samson.....	.....do.....	340	.....	May 18, 1865.....	Savannah river.....	.....	
65	Torpedo boat.....	Propeller.....	.....	.....	July 8, 1865.....	St. Jacinto, Texas.....	.....	
66	Tortugas.....	Schooner.....	.....	.....	.....	.....	.....	Raised.
67	Thorn.....	.....	.....	.....	.....	Cape Fear river.....	.....	Blockade-runner; called Tamaulipas No. 2, formerly.
68	Tampico.....	Side-wheel.....	.....	90,000	.....	New Orleans, La.....	.....	
69	Union.....	.....	.....	.....	.....	.....	.....	Turned over to Treasury Department, March 8, 1866.
70	Virgin.....	Side-wheel.....	.....	.....	May 2, 1865.....	Tombigbee river, Ala.....	.....	
71	Wilson.....	Tug.....	80	.....	.....	Newbern, N. C.....	.....	Returned to owner, December, 1865.
72	Young, William H.....	.....	.....	.....	.....	.....	.....	Condemned and broken up.
73	Zephaniah.....	Schooner.....	70	.....	.....	.....	.....	

Correct:

GEORGE D. WISE,  
Colonel Q. M. Department, Third Division, *Brevet Brigadier General, in charge.*

## Statement of vessels, pertaining to 3d division Quartermaster General's office, sunk, lost, or destroyed from the commencement of the war to June 30, 1866.

No.	Name of vessel.	Class.	Tonnage.	Owned or chartered.	When lost.	Where lost.	Valuation.	Remarks.
1	Adams, John.....	Canal barge.....	124	Chartered ..	May 2, 1864	.....	\$800	Foundered at sea.
2	Agnes .....	Side-wheel .....	300	.....	June 19, 1862	.....	.....	Burned.
3	And, Captain W. F. ....	Canal barge.....	.....	Chartered ..	Aug., 1862	.....	1,300	Burned at Aquia Creek, Va., by rebels.
4	Anna Sophia.....	Schooner.....	80	do.....	Sept. 4, 1865	.....	8,454	Captured by rebels.
5	Arrow .....	Propeller.....	.....	.....	May 15, 1863	Currituck canal.....	5,000	Destroyed by fire.
6	Abbot, F. H.....	Schooner.....	.....	.....	.....	.....	.....	Sunk as an obstruction.
7	Armstrong, General .....	do.....	248	Chartered ..	.....	James river .....	22,000	Collided with steamer Massachusetts.
8	Black Diamond .....	Propeller.....	184	do.....	April 24, 1864	Potomac river .....	25,000	Burnt to prevent enemy from taking possession.
9	Boston .....	.....	341	Owned .....	May 26, 1864	Ashepoo river, S. C.....	.....	Captured and blown up—army gunboat.
10	Briggs, Smith .....	Side-wheel .....	288	do.....	.....	James river .....	45,000	Wrecked and abandoned.
11	Burnside, General.....	Propeller.....	400	do.....	Feb. 18, 1864	St. John's river, Fla.....	45,000	Burned.
12	Brown, D. P.....	Canal barge.....	.....	Chartered ..	June 28, 1862	.....	.....	Sunk as an obstruction.
13	Benton, E. W.....	Schooner.....	183	do.....	June 16, 1864	James river .....	9,500	While engaging Fort Clifton, sunk—army gunboat.
14	Brewster, S. L.....	Steamer.....	224	do.....	May 9, 1864	Appomattox river.....	50,000	Burned.
15	Bailey, General.....	Brig.....	316	do.....	.....	New York.....	.....	Captured by rebel pirate Florida.
16	Berry, General .....	Bark .....	469	.....	.....	New York.....	.....	Burned.
17	Buchanan, James.....	Canal barge.....	.....	.....	Aug. 8, 1862	Off Ship Point.....	.....	Burned
18	Black Warrior.....	.....	.....	.....	Dec. 5, 1864	Fort Monroe, Va.....	.....	Sunk.
19	Berry, General .....	Stern-wheel .....	144	Chartered ..	April 20, 1864	.....	32,000	.....
20	Borough.....	Barge .....	300	.....	.....	Fort Washington, Md.....	.....	.....
21	Baltimore .....	Propeller.....	252	.....	.....	.....	40,000	.....
22	Bombshell .....	Steamer.....	140	Owned .....	.....	.....	55,000	Abandoned.
23	Connelly, E. T.....	Canal barge.....	121	Chartered ..	Mar. 15, 1865	Neuse river, N. C.....	2,500	Burned by explosion of a lamp.
24	Convoy.....	Side-wheel .....	410	Owned .....	Mar. 28, 1866	Barrancas, Fla.....	80,000	Lost.
25	Crayton, Captain.....	Canal barge.....	.....	Chartered ..	Aug. 26, 1862	.....	.....	Wrecked by grounding.
26	Chesapeake Trader.....	Schooner.....	84	do.....	Mar. 29, 1862	Fort Monroe, Va.....	.....	Lost in gale while attached to Potomac flotilla.
27	Cross, James W.....	Canal barge.....	.....	do.....	Mar. 29, 1862	Potomac river .....	800	Burnt by rebels.
28	Carrie Bell.....	do.....	.....	do.....	June 28, 1863	Near Seneca creek, Potomac.....	.....	Burnt by rebels.
29	Clifton, Ida .....	do.....	.....	do.....	June 28, 1863	.....	.....	Sunk.
30	Citizen .....	Schooner.....	103	do.....	July 25, 1864	.....	6,000	.....

31	Collins, L. D.....	Canal barge.....	133	do.....	Aug. 9, 1864	City Point, Va.....	3,200	Blown up.
32	Campbell, James C.....	do.....	147	do.....	June 24, 1862	White House, Va.....	1,800	Lost by explosion of ordnance.
33	Cowles, Colonel.....	Side-wheel.....	290	Owned.....	May 25, 1865	Mobile bay, Ala.....	20,000	Burned.
34	Collins, George C.....	Steamer.....	.....	Chartered.....	Mar. 29, 1865	St. Augustine bay.....	.....	Wrecked; ship and cargo total loss.
35	Detmold, Phebe L.....	Canal barge.....	.....	do.....	June 28, 1862	Near Seneca creek.....	.....	Foundered at sea.
36	Duncan, C. C.....	Ship.....	903	do.....	.....	Florida coast.....	.....	Lost by explosion of ordnance.
37	Dupont, Admiral.....	Side-wheel.....	750	Owned.....	June 9, 1865	N. Carolina coast.....	80,000	
38	Dale, Kate.....	do.....	520	.....	May 25, 1865	Mobile bay, Ala.....	40,000	
39	Davis, Samuel.....	.....	.....	.....	.....	.....	.....	
40	Dodge, F. & A. H.....	Canal barge.....	.....	.....	.....	.....	800	
41	Dell, Alice.....	Schooner.....	.....	.....	July, 1865	Brazos bar.....	.....	Struck rock.
42	Deane, Enoch.....	Steamer.....	.....	Owned.....	April 19, 1865	St. Catherine's sound	.....	Driven ashore in a squall
43	Delaware.....	do.....	.....	do.....	May 24, 1865	Jacksonville bar, Fla.....	.....	Sunk.
44	Engle, J. W.....	Barge.....	.....	Chartered.....	.....	Potomac river.....	.....	Sunk; cut thro' by ice and sunk—raised.
45	Express.....	Side-wheel st'r.....	.....	.....	.....	.....	.....	
46	Fair Lady.....	Canal barge.....	.....	.....	.....	.....	.....	Captured by rebels.
47	Fawn.....	Side-wheel st'r.....	.....	.....	Sept. 9, 1864	Near Currituck, Va.....	.....	Captured and burned by rebels.
48	Freeman, Lizzie.....	Tug.....	.....	Chartered.....	Dec. 6, 1864	James river.....	.....	Lost in gale while attached to Potomac flotilla.
49	Fitzpatrick, John.....	Canal barge.....	.....	do.....	March, 1862	Potomac river.....	400	Sunk as an obstruction at Drury's bluff.
50	Fulton.....	do.....	107	do.....	Feb. 24, 1865	James river.....	1,500	Foundered at sea.
51	Fannie.....	Side-wheel st'r.....	432	do.....	April, 1864	.....	86,400	Sunk as an obstruction.
52	Franklin.....	Bark.....	273	do.....	June, 1864	James river.....	9,000	
53	Fancy, Natchez.....	Side-wheel st'r.....	.....	do.....	.....	Gulf of Mexico.....	.....	Lost.
54	Gipsev.....	.....	.....	.....	.....	.....	.....	Run ashore—total loss.
55	Guerilla.....	Bark.....	.....	Owned.....	Dec. 9, 1864	Cape Henry.....	.....	Lost in gale while attached to Potomac flotilla.
56	Gregory, Richmond.....	Canal barge.....	.....	Chartered.....	March, 1862	Potomac river.....	800	
57	Hanging Rock.....	.....	.....	.....	.....	.....	.....	Sunk—cargo lost.
58	Hannah Sophia.....	Steam barge.....	120	.....	.....	Hill's Point.....	.....	Lost by sinking while in tow.
59	Hunter, Capt. Chas.....	Canal barge.....	112	Chartered.....	May 25, 1864	Mouth Rap. river.....	1,500	Sunk.
60	Hunt, B. W.....	do.....	.....	.....	Jan. 7, 1865	Elk river.....	.....	Destroyed by fire on voyage to Cal.
61	Howland, Susan.....	Ship.....	.....	.....	.....	At sea.....	.....	Captured and burned by rebels.
62	Howlett, A. A.....	Canal barge.....	135	Chartered.....	April 7, 1865	Neuse river, N. C.....	4,000	Sunk by torpedo.
63	Hamilton, R. B.....	Side-wheel st'r.....	400	Owned.....	May 12, 1865	Mobile harbor.....	40,000	Sunk as an obstruction.
64	Haxall.....	Schooner.....	257	Chartered.....	June 15, 1864	James river.....	14,000	Burnt by rebels.
65	Heiston, J. C.....	Canal barge.....	70	Owned.....	July 10, 1864	.....	1,000	Sunk by rebel torpedo; has been raised and sold.
66	Hunter, General.....	Side-wheel st'r.....	.....	do.....	April 6, 1864	St. John's river.....	.....	Struck snag—total loss.
67	Hill, Mary.....	do.....	236	Surrendered.....	Nov. 22, 1865	Trinity river, Texas.....	.....	Wrecked.
68	Halligan.....	Canal barge.....	.....	Chartered.....	Mar. 19, 1862	.....	.....	

## Statement of vessels pertaining to third division, &amp;c.—Continued.

No.	Name of vessel.	Class.	Ton- nage.	Owned or chartered.	When lost.	Where lost.	Valua- tion.	Remarks.
69	Hard Times .....	Canal barge .....	.....	Chartered ..	.....	.....	\$700	Lost while in gale attached to Potomac
70	Hoffman, Martin .....	do .....	.....	do .....	March, 1862	Potomac river .....	350	flotilla.
71	Healy, Dr. J. A. ....	do .....	.....	do .....	June 28, 1863	Near Seneca creek ..	.....	Burned by rebels.
72	Harriet .....	do .....	.....	do .....	Oct. 22, 1865	Key West, Florida ..	.....	Sunk.
73	Josephine .....	Schooner .....	.....	.....	May, 1864	Indianola .....	.....	By order of General Roberts, command- ing United States forces.
74	Illinois .....	Bark .....	.....	.....	.....	.....	.....	.....
75	International .....	Ship .....	1,000	Chartered ..	Dec., 1862	Off Hog island .....	.....	Wrecked.
76	Industry .....	Canal barge .....	.....	do .....	Oct. 27, 1862	.....	.....	Destroyed.
77	Julick, T. C. ....	do .....	.....	do .....	Mar. 19, 1862	.....	.....	Wrecked.
78	Juniata .....	do .....	.....	do .....	March, 1862	Potomac river .....	700	Lost in gale while attached to Potomac flotilla.
79	Johns, William .....	Schooner .....	.....	do .....	.....	.....	.....	Sunk by collision.
80	Jones, Joseph .....	Canal barge .....	.....	do .....	.....	.....	.....	Lost while being towed.
81	Kisner, William .....	do .....	.....	do .....	March, 1862	Potomac river .....	700	Lost in gale while attached to Potomac flotilla.
82	Kingston .....	Side-wheel st'r ..	218	do .....	July 24, 1864	Mouth Rap. river ..	25,000	Destroyed by fire.
83	Kendricks, Col. E. E. ..	Barge .....	145	do .....	Aug. 9, 1864	City Point, Va. ....	6,000	Cargo of ammunition exploded.
84	Lee, Thomas T. ....	Canal barge .....	.....	do .....	Aug. 5, 1862	Off Ship Point .....	.....	Wrecked.
85	Lanetta .....	do .....	.....	do .....	March, 1862	Potomac river .....	800	Lost in gale while attached to Potomac flotilla.
86	Lynn, George .....	do .....	.....	do .....	June 28, 1863	Near Seneca creek ..	.....	Burned by rebels.
87	Lyon, George .....	do .....	122	do .....	May 12, 1865	At sea .....	1,700	Foundered.
88	Lyon, General .....	Side-wheel st'r ..	1,026	do .....	Mar. 31, 1865	Coast of N. Carolina ..	140,000	Destroyed by fire.
89	Lewis, Edwin .....	.....	.....	.....	.....	.....	.....	.....
90	Lind, Jenny .....	Ship .....	.....	.....	.....	Near Nassau, N. P. ..	.....	Lost.
91	Levy, B. C. ....	.....	.....	.....	.....	.....	.....	Burned.
92	Long Island .....	.....	.....	.....	.....	.....	.....	Raised and rebuilt.
93	Leviathan .....	Tug .....	.....	.....	.....	.....	.....	Lost.
94	Leon .....	.....	.....	.....	.....	.....	.....	.....
95	Lark .....	Canal barge .....	.....	.....	Oct. 13, 1864	Chesapeake bay .....	.....	Sunk.
96	Lilly No. 2 .....	Schooner .....	.....	Chartered ..	Oct., 1865	Brazos bar .....	.....	Raised.
97	Mattano .....	Side-wheel st'r ..	.....	.....	.....	.....	.....	.....



98	Morton, Governor	Canal barge	Chartered	June 24, 1863	Near Seneca c'k, Md.	Destroyed.
99	Monitor					Burned by rebels.
100	Millboy					Sunk—total loss.
101	Mary Elizabeth	Schooner			Brandywine shoals	Lost.
102	Meade, Major Gen	Canal barge				Lost.
103	Mount Penn	do	Chartered	Nov. 12, 1864	Chesapeake bay	Sunk.
104	Mayer, Mary	do	do	Aug. 18, 1864	James river	Sunk as an obstruction.
105	Mary Almira	Brig	do	June 1, 1863	At sea	Captured and burned by tender to rebel pirate Florida. Value, com'y stores.
106	Maple Leaf	Side-wheel st'r	do	April 1, 1864	St. John's river, Fla.	Destroyed by torpedo.
107	Minquas		do	April 7, 1865	Neuse river, N. C.	Burned by rebels.
108	Marmaduke	Canal barge	do	March, 1862	Potomac river	Lost in gale while attached to Potomac flotilla.
109	Mist	Schooner	do		James river	Sunk as an obstruction.
110	Milton, Governor	Steamer	Captured	Feb., 1863	Willtown, S. Edisto	Sunk.
111	Norman	do				Captured by rebels.
112	Nutton				James river	Sunk.
113	Nimrod	Canal barge	Chartered	June 28, 1863	Near Seneca creek	Burned by rebels.
114	Neversink	do	do	Sept. 9, 1864	At sea	Foundered.
115	North America	Side-wheel st'r	do	Dec. 22, 1864	N. Orleans to N. Y.	Foundered.
116	Niagara or Suffolk	Propeller	Owned		Mississippi river	Run ashore and destroyed.
117	Nye, Marshall	Propeller	Chartered	Jan. 17, 1862	Off Cape Hatteras	Sunk.
118	North America			Oct. 8, 1863	Algiers, La.	Sunk.
119	New York		Chartered		Hatteras inlet, N. C.	Lost in crossing bar.
120	Odd Fellow	Canal barge	do	March, 1862	Potomac river	Lost in gale while attached to Potomac flotilla.
121	O'Neil, W. T. B.	do	do	June 26, 1863	Near Seneca cr'k, Md	Burned by rebels.
122	Orner, Jennie D	do	do	Jan. 17, 1862	Off Cape Hatteras	Lost.
123	Perseverance	do	do		White House, Va.	Destroyed.
124	Parthenia	Steamer				
125	Price, Alice			June 19, 1864	St. John's river	Sunk by rebel torpedoes, machinery since raised and sent to New York.
126	Pentz, Nellie	Propeller	Chartered	Nov. 29, 1865	Near Norfolk, Va	Stranded—total loss.
127	Pocahontas		Owned	Jan. 18, 1862	Off coast of N. Jersey	Collided with steamer City of Bath—total loss.
128	Pioneer	Side-wheel st'r		Nov. 10, 1865		
129	Porter, C. F.	Canal barge	Chartered	June 28, 1863	Near Seneca cr'k, Md	Burned by rebels.
130	Ploughboy	do	do	June 28, 1863	do	Do.
131	Pickup Maria	Schooner	do	Sept. 30, 1865	James river	Sunk as an obstruction.
132	Patroon	Propeller	Owned	Nov. 10, 1865	Brazos	
133	Quinnebaug	do	Chartered	July 29, 1865		

## Statement of vessels pertaining to third division, &amp;c.—Continued.

No.	Name of vessel.	Class.	Ton- nage.	Owned or chartered.	When lost.	Where lost.	Valua- tion.	Remarks.
69	Hard Times .....	Canal barge .....	.....	Chartered ..	.....	.....	\$700	Lost while in gale attached to Potomac
70	Hoffman, Martin .....	do .....	.....	do .....	March, 1862	Potomac river .....	350	flotilla.
71	Healy, Dr. J. A. ....	do .....	.....	do .....	June 28, 1863	Near Seneca creek ..	.....	Burned by rebels.
72	Harriet .....	do .....	.....	do .....	Oct. 22, 1865	Key West, Florida ..	.....	Sunk.
73	Josephine .....	Schooner .....	.....	.....	May, 1864	Indianola .....	.....	By order of General Roberts, command- ing United States forces.
74	Illinois .....	Bark .....	.....	.....	.....	.....	.....	Wrecked.
75	International .....	Ship .....	1,000	Chartered ..	Dec., 1862	Off Hog island .....	.....	Destroyed.
76	Industry .....	Canal barge .....	.....	do .....	Oct. 27, 1862	.....	.....	Wrecked.
77	Julick, T. C. ....	do .....	.....	do .....	Mar. 19, 1862	.....	.....	Lost in gale while attached to Potomac
78	Juniata .....	do .....	.....	do .....	March, 1862	Potomac river .....	700	flotilla.
79	Johns, William .....	Schooner .....	.....	do .....	.....	.....	.....	Sunk by collision.
80	Jones, Joseph .....	Canal barge .....	.....	do .....	.....	.....	.....	Lost while being towed.
81	Kisner, William .....	do .....	.....	do .....	March, 1862	Potomac river .....	700	Lost in gale while attached to Potomac
82	Kingston .....	Side-wheel st'r ..	218	do .....	July 24, 1864	Mouth Rap. river ..	25,000	flotilla.
83	Kendricks, Col. E. E. ..	Barge .....	145	do .....	Aug. 9, 1864	City Point, Va. ....	6,000	Destroyed by fire.
84	Lee, Thomas T. ....	Canal barge .....	.....	do .....	Aug. 5, 1862	Off Ship Point .....	.....	Cargo of ammunition exploded.
85	Lanetta .....	do .....	.....	do .....	March, 1862	Potomac river .....	800	Wrecked.
86	Lynn, George .....	do .....	.....	do .....	June 28, 1863	Near Seneca creek ..	.....	Lost in gale while attached to Potomac
87	Lyon, George .....	do .....	122	do .....	May 12, 1865	At sea .....	1,700	flotilla.
88	Lyon, General .....	Side-wheel st'r ..	1,026	do .....	Mar. 31, 1865	Coast of N. Carolina ..	140,000	Burned by rebels.
89	Lewis, Edwin .....	Ship .....	.....	.....	.....	Near Nassau, N. P. ..	.....	Foundered.
90	Lind, Jenny .....	do .....	.....	.....	.....	.....	.....	Destroyed by fire.
91	Levy, B. C. ....	do .....	.....	.....	.....	.....	.....	Lost.
92	Long Island .....	do .....	.....	.....	.....	.....	.....	Burned.
93	Leviathan .....	Tug .....	.....	.....	.....	.....	.....	Raised and rebuilt.
94	Leon .....	do .....	.....	.....	.....	.....	.....	Lost.
95	Lark .....	Canal barge .....	.....	.....	Oct. 13, 1864	Chesapeake bay .....	.....	Burned.
96	Lilly No. 2 .....	Schooner .....	.....	Chartered ..	Oct., 1865	Brazos bar .....	.....	Raised and rebuilt.
97	Mattano .....	Side-wheel st'r ..	.....	.....	.....	.....	.....	Lost.

99	Morton, Governor	Canal barge	Chartered	June 24, 1863	Near Seneca cr'k, Md.	Destroyed.
99	Monitor					Burned by rebels.
100	Millboy					Sunk—total loss.
101	Mary Elizabeth	Schooner			Brandywine shoals.	Lost.
102	Meade, Major Gen	Canal barge				Lost.
103	Mount Penn	do	Chartered	Nov. 12, 1864	Chesapeake bay	Sunk.
104	Mayer, Mary	do	do	Aug. 18, 1864	James river	Sunk as an obstruction.
105	Mary Almira	Brig	do	June 1, 1863	At sea	Captured and burned by tender to rebel pirate Florida. Value, com'y stores.
106	Maple Leaf	Side-wheel st'r	do	April 1, 1864	St. John's river, Fla.	Destroyed by torpedo.
107	Minquas		do	April 7, 1865	Neuse river, N. C.	Burned by rebels.
108	Marmaduke	Canal barge	do	March, 1862	Potomac river	Lost in gale while attached to Potomac flotilla.
109	Mist	Schooner	do		James river	Sunk as an obstruction.
110	Milton, Governor	Steamer	Captured	Feb., 1863	Willtown, S. Edisto.	Sunk.
111	Norman	do				Captured by rebels.
112	Nutten				James river	Sunk.
113	Nimrod	Canal barge	Chartered	June 28, 1863	Near Seneca creek	Burned by rebels.
114	Neversink	do	do	Sept. 9, 1864	At sea	Foundered.
115	North America	Side-wheel st'r	do	Dec. 22, 1864	N. Orleans to N. Y.	Foundered.
116	Niagara or Suffolk	Propeller	Owned		Mississippi river	Run ashore and destroyed.
117	Nye, Marshall	Propeller	Chartered	Jan. 17, 1862	Off Cape Hatteras	Sunk.
118	North America			Oct. 8, 1863	Algiers, La.	Sunk.
119	New York		Chartered		Hatteras inlet, N. C.	Lost in crossing bar.
120	Odd Fellow	Canal barge	do	March, 1862	Potomac river	Lost in gale while attached to Potomac flotilla.
121	O'Neil, W. T. B.	do	do	June 26, 1863	Near Seneca cr'k, Md	Burned by rebels.
122	Orner, Jennie D	do	do	Jan. 17, 1862	Off Cape Hatteras	Lost.
123	Perseverance	do	do		White House, Va.	Destroyed.
124	Parthenia	Steamer				
125	Price, Alice			June 19, 1864	St. John's river	Sunk by rebel torpedoes, machinery since raised and sent to New York.
126	Pentz, Nellie	Propeller	Chartered	Nov. 29, 1865	Near Norfolk, Va	Stranded—total loss.
127	Pocahontas		Owned	Jan. 18, 1862	Off coast of N. Jersey	Collided with steamer City of Bath—total loss.
128	Pioneer	Side-wheel st'r		Nov. 10, 1865		
129	Porter, C. F.	Canal barge	Chartered	June 28, 1863	Near Seneca cr'k, Md	Burned by rebels.
130	Ploughboy	do	do	June 28, 1863	do	Do.
131	Pickup Maria	Schooner	do	Sept. 30, 1865	James river	Sunk as an obstruction.
132	Patroon	Propeller	Owned	Nov. 10, 1865	Brazos	
133	Quinnebaug	do	Chartered	July 29, 1865		

## Statement of vessels pertaining to 3d division, &amp;c.—Continued.

No.	Name of vessel.	Class.	Tonnage.	Owned or chartered.	When lost.	Where lost.	Valuation.	Remarks.
134	Robertson, Dr. J....	Canal barge....	.....	Chartered ..	Mar., 1862	Potomac river .....	600	Lost in gale—attached to Potomac flotilla.
135	Bingler, Jerome.....	.....do .....	123	.....	Sept. 28, 1864	Baltimore, Md.....	1,500	Destroyed by fire.
136	Robert and Elizabeth	.....do .....	.....	.....	.....	White House, Va ..	.....	Destroyed.
137	Sykes, L. A.....	Steamer .....	.....	.....	.....	.....	.....	Captured.
138	Swan, Thomas.....	.....	.....	.....	.....	.....	.....	Cut into by ice and sunk.
139	Small, Wilson.....	.....	.....	.....	.....	.....	.....	Wrecked.
140	Scott, Winfield.....	.....	.....	Owned.....	Jan., 1862	Scull creek, S. C....	.....	Sunk.
141	Sweet, A. L.....	Canal barge....	131	Chartered ..	Nov. 12, 1864	Chesapeake bay.....	2,000	Dragged ashore in gale.
142	Smith, Hiram.....	.....	.....	.....	.....	.....	.....	Captured and burned by rebels.
143	Shields, General .....	.....do .....	122	Chartered ..	April 7, 1865	Neuse river, N. C....	3,800	Lost in gale—attached to Potomac flotilla.
144	Savin, L. V.....	.....do .....	.....	.....do.....	Mar., 1862	Potomac river.....	850	.....
145	Stanhope, A.....	.....do .....	.....	.....do.....	June 28, 1863	Near Seneca cr'k, Md	.....	Burned by rebels.
146	Stewart, David.....	.....do .....	.....	.....do.....	June 28, 1862	.....do.....	.....	Do.
147	Santa Anna.....	.....do .....	.....	.....do.....	June 28, 1863	.....do.....	.....	Do.
148	Satterly, Colonel.....	Schooner.....	235	.....do.....	.....	James river .....	14,000	Sunk as an obstruction.
149	Secor, Thomas F.....	Steamer .....	.....	.....do.....	May, 1863	Hilton Head.....	.....	Burned at Seabrook's landing.
150	Skirmisher .....	Schooner.....	234	Owned.....	Oct, 1865	Brazos bar .....	.....	.....
151	Scout.....	.....do .....	347	.....do.....	Jan. 8, 1866	Brazos.....	.....	Wreck sold at auction.
152	Typhoon.....	Bark.....	340	.....	.....	.....	.....	.....
153	Titan.....	Tug.....	114	Chartered ..	——, 1864	Cherry stone, Md....	31,500	Captured by rebels.
154	Thorne.....	Propeller.....	403	.....	.....	.....	40,000	Sunk by rebel torpedo.
155	Thompson, Maria....	Canal barge....	.....	Chartered ..	March, 1862	Potomac river.....	400	Lost in gale—attached to Potomac flotilla.
156	Tornado .....	Brig.....	250	.....do.....	.....	At sea .....	.....	Foundered—vessel and cargo total loss.
157	Thomas, N. W.....	.....	480	Owned.....	May 25, 1865	Mobile river.....	8,000	Destroyed by explosion of ordnance.
158	Tompkins, Calvin...	Tug.....	87	Chartered ..	Jan. 28, 1864	Ft. Washington, Md	10,000	Blown up.
159	Union .....	.....	1124	.....	Nov. 3, 1861	Coast of N. Carolina.	100,000	Wrecked—used as army gunboat.
160	Union .....	Schooner.....	132	Owned.....	Feb., 1866	At sea.....	6,500	Lost.
161	Vera Cruz.....	Canal barge....	124	Chartered....	.....	James river .....	3,000	Sunk as an obstruction.
162	Van Name, Tillie....	Bark.....	653	.....do.....	.....	At sea.....	.....	Foundered—crew, cargo, and vessel lost.
163	Vaughn, Samuel.....	Canal barge....	.....	.....	.....	White House, Va....	.....	.....
164	Voltiguer.....	Bark .....	343	Owned.....	.....	New York.....	15,000	Burned.

	Whitford, Julia A.	Schooner	263	Chartered	May 9, 1864	James river	22,000	Sunk as an obstruction.
165	Weed, H. A.		290	Owned	May 9, 1864	St. John's river	30,000	Destroyed by torpedo; machinery since raised and sent to New York.
167	Whitman, L.						23,000	
168	Wimpenny, jr., John	Canal barge	113	Chartered	Jan. 20, 1863			
169	Wilson, John R.	do		do	Mar., 1863	Potomac river	250	Lost in gale—attached to Potomac flo- tilla.
170	Wild Kate	do		do	Mar., 1862	do	650	Lost in gale—attached to Potomac flo- tilla.
171	White, J. B.	Tug	50	do				
172	Weston, H. E.	Schooner						
173	Washington, George	Steamer		Chartered	Feb., 1863	P't Royal Ferry, S. C.		Sunk by the enemy.
174	Wallis, P. C.	Barge			April 25, 1863	Off Montauk Point		Broke into and sunk.
175	Wonder	Schooner	189					Sunk.
176	Warner, John	Steamer	527	Chartered		White House, Va.		Destroyed.
177	Warrior	Canal barge						
178	West Point	Side-wheel st'r.	380					
179	Wagner, T. D.	Brig	390	Chartered			25,000	Destroyed by rebel pirate Tallahassee.
180	Zimmerman	Canal barge	135	do	Dec. 6, 1864	James river		Captured and burned by rebels.

Correct:

GEORGE D. WISE,

Colonel Quartermaster's Department,

Brevet Brig. Gen. in charge Third Division.

*Statement showing the claims received, audited, and rejected in the third division Quartermaster General's office, for the fiscal year ending June 30, 1866.*

Claims presented.		Approved.		Ref'd to auditor.		Suspended.		Rejected.	
No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.	No.	Am't.
2052	\$9,567,620 54	1604	\$7,809,142 76	76	\$755,556 01	370	\$1,002,425 57	2	\$496 20

Correct:

GEO. D. WISE,  
Brevet Brigadier General and Quartermaster.

No. 6.

FOURTH DIVISION—RAIL AND RIVER TRANSPORTATION.

QUARTERMASTER GENERAL'S OFFICE,  
*Washington, D. C., October 1, 1866.*

GENERAL: I have the honor to submit a report of the operations of this division for the fiscal year ending June 30, 1866.

This division provides for and regulates the inland transportation of the army and its supplies.

Transportation has been, during the war, provided by the following different methods:

First. By rail.

Either by making use of railroads operated by the companies, as generally in the northern States, at so much per man, or per pound; or

By seizing and operating existing railroads in the States which were the seat of war, or in rebellion, or by constructing, stocking, and running new lines to meet the exigencies of military operations.

Second. By steamboats.

These have been either constructed or purchased by government, or captured from the enemy, or impressed under military necessity, whether from disloyal or loyal owners, or they have been chartered at fixed rates, (the vessels in all the above cases being sometimes run by crews in direct government pay; sometimes run by individuals under a contract with government to man, victual, and equip; sometimes run by the crews found on board, whose services are impressed with the vessel, and who are paid by the owners,) or, lastly, steamboats have been employed by the government to do its transportation, at so much per man, per head, or per pound.

Third. By barges.

These have been largely employed in transportation of animals and of supplies. They have been owned either by government, or captured, or impressed, or hired, and in all these cases, run by government; or they have, without coming into possession of government, been used by those engaged in transporting supplies, whether under impressment or contract.

Fourth. By stage.

In remote rural districts where the railroad has not penetrated; in certain portions of the south where the railroads were destroyed; and on the overland routes on the plains, stage transportation has been employed. It has been generally supplied by existing stage lines, at so much per man per mile.



**Fifth. By wagons.**

The use of wagon transportation (with the exception of that by wagons owned by government, and attached to armies in the field, or used at military depots, and which are regulated by another branch of the quartermaster's department) has been mainly confined to the transportation of the stores for the supply of the military posts on the northern frontier, in Texas, and on the plains.

This extensive service is now performed almost wholly by contractors at fixed rates, under contracts annually let to the lowest responsible bidder.

In addition to inland transportation, and as incidental to it, the duties of this division embrace :

The regulation and payment of tolls for the use made by government for army purposes of turnpikes, bridges and ferries, throughout the United States ; and, also,

The regulation of the United States military telegraph.

**AMOUNT OF TRANSPORTATION AND ITS COST FOR THE YEAR.**

At the close of the last fiscal year orders had already been given, and arrangements made, for the disbandment of the greater part of the volunteer force, for the disposal of the surplus material, and the reduction of the scale of expenditure, but these changes had been but partially effected.

The report of last year embraced in the number of troops transported, the movement of most of the regiments composing the army of the Potomac to the rendezvous in the several States, preparatory to muster-out, but at the close of the fiscal year most of these regiments were still at the rendezvous, not yet scattered to their homes ; the army of General Sherman was at Louisville, and the remaining troops were still in active employment in Texas, in the Indian territory, and garrisoning the recently occupied rebellious States.

The larger part of the actual transportation consequent upon the disbandment of the volunteer army and the settlement of the accounts for nearly the whole of this transportation fall within this fiscal year.

In addition to the movement of the army and its supplies, transportation has been furnished during this year for the rebel prisoners who were at the north to their homes in the south, and, upon the requisition of the Freedmen's Bureau, to a very large number of freedmen and refugees.

A subjoined table exhibits the number of troops, and the quantities of supplies transported during the year. A second table shows the total of payments made during the year for this transportation.

These tables have been prepared by adding together the reports of the various officers, furnishing or paying for transportation, but as many officers who have furnished or paid for transportation, have failed to make the required reports, and have left the service, it is believed that the totals of both tables fall considerably short of the true amounts.

**TRANSPORTATION BY RAIL PER MAN OR POUND.**

The greater part of the transportation of troops and supplies has been during the year, and will continue to be, performed by rail.

The rates fixed for this service by a convention of railroad managers, early in the war, and which were promulgated in the circular of the Quartermaster General of May 1, 1862, still continue to be the standard of compensation for railroad transportation, and the accounts of the southern railroads which have performed service since the surrender of the rebel armies have been settled upon this basis.

Some of the latter roads complain of the rates as inadequate to meet the heavier cost of operating railroads in their sections, and a few, a very few, northern railroads have claimed that the obligation to transport at these rates ceased with

the close of the rebellion, or the proclamation of peace, but the great bulk of the railroads of the northern States recognize the mutual advantage of fixed rates in promoting prompt and easy settlement of accounts, and the propriety of performing for government, who is their heaviest customer, transportation of such troops and military supplies as it requires to move, in providing for the common protection, at lower rates than those charged to the public.

The bulk of the accounts for transportation by rail per man and pound, up to January 1, 1866, have been settled and paid.

There remain of the war accounts in this special branch, with the exception of some unadjusted accounts of southern railroads, only scattered claims, of which imperfections in the proofs of the services have prevented the usual settlement.

The accounts for current services are now promptly settled as rendered. These are, of course, very much lighter, though the quartermaster's department continued until the close of the fiscal year to furnish and pay for the considerable transportation required by the Freedmen's Bureau, as well as that for the army.

#### MILITARY RAILROADS.

The accompanying report of General McCallum exhibits the operations of the military railroad department during the war and since its close. This report could not be prepared in season to be included in the annual report of last year. It therefore constitutes the report of the military railroad department for the war, and is brought down to near the close of the fiscal year ending June 30, 1866. A few of the military railroads, principally in the extreme southwest, did not come under the control of General McCallum, and are not embraced in his report. I have added the data respecting these in the several tables which follow, exhibiting, respectively—

The number, the names, and lengths of the railroads seized and operated by the government at any time during the war, including those constructed by the United States.

The number of engines and cars purchased, built, captured, and disposition made of them.

The total expenditure on account of military railroads during the war.

It appears from these tables that the number of railroads operated was 50; the total length in miles, 3,630½; the total number of engines, 433; of cars, 6,605; the total expenditure on account of military railroads during the war, \$15,367,480 27.

#### DISPOSITION OF MILITARY RAILROADS AFTER THE WAR.

Upon the surrender of the rebel armies and the occupation of the entire territory, which had been in rebellion, by the troops of the United States, one of the most important questions which engaged the attention of the government was the disposition to be made of the military railroads and of the military railroad property held by the government.

In those sections to which, prior to the surrender, our armies had not penetrated or through which they had only temporarily passed, the railroads were, upon the occupation of the country after the surrender not seized, but suffered to continue or to resume their usual operations under the control of their owners, furnishing such transportation as government required of troops and supplies. But the greater part of the principal railroads of the southern States, especially those in North Carolina and in Virginia, and nearly all those centering in Tennessee, were in the possession of the government and operated by it.

Application was early made by the companies formerly owning the railroads in North Carolina and Virginia for the return of their roads to them. The government was desirous of relieving itself of the heavy charge of their maintenance,

and also of promoting the resumption of trade and intercourse, by leaving to private and corporate enterprise the control of the channels of transportation.

At the close of the last fiscal year a few of the railroads of Virginia and North Carolina had already been turned over, either to the board of public works of Virginia or to the former corporations, upon the basis recommended by you in a letter to the Secretary of War, of May 19, 1865. But the principal centre of military railroad operations was in Tennessee, and on August 8, 1865, an executive order was addressed to Major General George H. Thomas, commanding the military division of the Tennessee, prescribing a method upon which the railroads of that military division should be returned to their owners, and the military railroad property belonging to the government disposed of. It provided that the military railroad property should be sold to such of the railroads as required it, in proportion to their needs, either for cash, or, if they could not pay for it, on a credit of one year, secured by the individual guarantee of the officers and stockholders of the several railroads. This form of security being objected to by the railroad companies, a second executive order was, on the 14th of October, addressed to General Thomas, more particularly setting forth the terms upon which the transfer of the railroads and railroad property should be effected, and prescribing a form of bond to be executed by the company in its corporate capacity, to secure payment for the purchases made by it within two years, in equal monthly instalments, with interest at  $7\frac{3}{8}$  per cent.

Copies of these two orders were annexed to the last report.

The transfers of all railroads and railroad property in the other military divisions, as well as in that of Tennessee, have since been regulated by the provisions of these orders.

All the railroads seized during the war had, before the expiration of the fiscal year, been returned to the owners, and the railroads constructed by government had been either sold or taken up and the materials sold, with the exception of some short tracks in cities and at military depots, and of the military railroad from Brazos Santiago to the Rio Grande, which latter road was advertised for sale April 19, 1866, though not finally sold until July 7, 1866.

The military railroad property owned by the United States has been all disposed of, with the exception of about eight hundred tons of railroad iron, fifteen box and flat cars, five hundred thousand feet bridge timber, a dismantled engine, and some miscellaneous tools, &c., advertised to be sold early in October.

The annexed tables exhibit the dates at which the several railroads have been turned over, the sales for cash and on credit of military railroad property, and the amounts received therefor.

The total received from cash sales of military railroad property during the fiscal year has been \$3,466,739 33.

The total of sales on credit, including sales on credit of six months without interest, to eastern railroads, as well as those under the Executive orders, is.....		\$7, 444, 073 22
The interest on which to June 30, 1866, is.....		326, 086 01
Total indebtedness June 30, 1866.....		<hr/> 7, 770, 159 23
The total payments of principal and interest for the same period amount to.....		1, 200, 085 18
Leaving due June 30, 1866, principal and interest.....		<hr/> <hr/> 6, 570, 074 05

In accordance with the directions of the Executive order of October 14, Major General George H. Thomas, commanding military division of the Tennessee, has caused to be prepared a report of the cost of repairs and improvements put upon the several railroads of the military division of the Tennessee.

No. 2.—Consolidated statement of amounts paid for transportation by rail, river, stage, and wagon, and for tolls on turnpikes, bridges and ferries, during the fiscal year ending June 30, 1866.

Quartermaster.	Station.	Railroad.	River.	Stage.	Wagon.	Turnpike.	Bridge.	Ferry.	Total.
Colonel R. M. Newport.....	Baltimore, Md.....	\$779, 228 24	.....	.....	.....	.....	.....	.....	\$779, 228 24
Colonel G. W. Bradley.....	do.....	2, 874, 326 55	.....	.....	.....	.....	.....	.....	2, 874, 326 55
Captain J. W. McKim.....	Boston, Mass.....	388, 849 62	\$32, 062 52	\$9, 017 60	\$24, 147 43	.....	.....	.....	454, 077 17
Colonel J. A. Ellison.....	Chicago, Ill.....	32, 370 89	.....	.....	.....	.....	.....	.....	32, 370 89
Brevet Lieutenant Colonel L. H. Pierce.....	do.....	974, 366 92	4, 431 12	297 82	.....	.....	.....	.....	979, 095 86
Colonel R. Burr.....	Columbus, Ohio.....	62, 110 57	1 25	6 00	.....	.....	.....	.....	62, 117 82
Captain C. H. Barnard.....	Charleston, S. C.....	.....	1, 977 73	.....	.....	.....	.....	.....	1, 977 73
Brevet Lieutenant Colonel C. W. Thomas.....	do.....	.....	4, 170 33	340 00	.....	.....	.....	\$73 40	4, 583 73
Captain T. B. Hunt.....	Cincinnati, Ohio.....	1, 520, 148 98	1, 584, 363 54	162 30	2, 528 91	.....	.....	.....	3, 107, 263 73
Colonel G. W. Lee.....	Detroit, Mich.....	253, 962 87	35, 801 28	580 30	.....	.....	.....	.....	290, 344 45
Brevet Brigadier General C. H. Hoyt.....	do.....	957 00	.....	.....	.....	.....	.....	.....	957 00
Captain J. W. Pearman.....	Davenport, Iowa.....	16, 403 89	18, 297 26	4, 198 93	10 25	.....	.....	.....	38, 910 33
Colonel J. A. Potter.....	Fort Leavenworth, Kan.....	920 28	94, 966 09	10, 446 41	2, 649, 667 14	\$333 59	\$3, 228 87	.....	2, 759, 622 38
Captain J. R. Del Vecchio.....	Louisville, Ky.....	883, 097 22	784, 433 81	195 05	.....	53, 666 46	2, 908 77	14, 948 56	1, 739, 249 87
Brevet Colonel R. N. Batchelder.....	do.....	137, 742 95	48, 021 06	186 00	.....	5, 035 17	.....	3, 404 72	194, 389 90
Captain J. H. Pratt.....	Little Rock, Ark.....	.....	8, 943 18	.....	.....	.....	.....	.....	8, 943 18
Colonel H. T. Noble.....	do.....	.....	165, 108 79	.....	1, 060 73	.....	.....	3, 827 44	169, 996 96
Captain S. B. Brown.....	Nashville, Tenn.....	391, 732 93	20, 453 80	.....	.....	.....	.....	.....	412, 186 73
Brevet Lieutenant Colonel F. J. Crilly.....	do.....	224, 671 51	.....	.....	.....	.....	.....	.....	224, 671 51
Captain S. R. Hamill.....	do.....	102, 996 64	53, 107 11	22 00	.....	.....	.....	.....	156, 125 75
Captain J. B. Dexter.....	New Orleans, La.....	2, 096 99	10, 894 43	.....	.....	.....	.....	1, 414 22	14, 405 64
Captain A. J. McGonnigle.....	do.....	7, 147 60	73, 573 74	.....	4, 627 00	65 75	.....	541 33	85, 955 42
Captain W. W. Van Ness.....	New York, N. Y.....	803, 695 90	193, 485 87	116 13	.....	.....	.....	.....	997, 297 90
Major R. C. Morgan.....	do.....	375, 671 39	72, 216 05	71, 328 79	.....	.....	.....	.....	519, 216 23
Captain Henry Bowman.....	Philadelphia, Pa.....	161, 733 10	6, 426 37	102 20	2, 777 19	.....	.....	.....	171, 038 86
Lieutenant Colonel O. Cross.....	Pittsburg, Pa.....	550, 912 18	23, 208 00	141 26	1, 073 03	.....	.....	.....	575, 334 47
Lieutenant Colonel E. E. Camp.....	do.....	5, 990 31	.....	.....	.....	.....	.....	.....	5, 990 31
Captain Henry Inman.....	Portland, Me.....	157 66	18, 673 45	.....	.....	.....	.....	.....	18, 831 11
Brevet Major G. C. Winslow.....	Raleigh, N. C.....	81, 384 14	5, 774 50	.....	.....	.....	.....	.....	87, 158 64
Colonel J. F. Boyd.....	do.....	.....	81, 769 60	.....	.....	.....	.....	.....	81, 769 60
Major W. H. D. Cochrane.....	Richmond, Va.....	.....	6, 220 77	.....	.....	.....	.....	.....	6, 220 77
Captain H. L. Carver.....	St. Paul, Minn.....	74, 581 49	27, 298 84	7, 128 40	155, 165 52	.....	.....	.....	264, 174 25
Captain C. W. Nash.....	do.....	.....	.....	.....	.....	.....	16 75	105 65	122 40
Captain L. S. Metcalf.....	St. Louis, Mo.....	.....	555 32	.....	.....	.....	.....	.....	555 32
Captain George P. Webster.....	do.....	1, 451 49	.....	.....	5 00	.....	.....	.....	1, 456 49
Colonel William Myers.....	do.....	433, 374 98	1, 001, 836 91	1, 393 75	564 75	.....	.....	.....	1, 437, 170 39
Brevet Brigadier General L. C. Easton.....	do.....	664, 597 83	676, 514 95	13, 931 55	452, 894 66	.....	.....	.....	1, 807, 938 99
Major R. W. Kirkham.....	San Francisco, Cal.....	.....	30, 977 72	469, 896 16	7, 146 73	.....	124 00	512 60	508, 657 21
Captain J. G. Payne.....	Washington, D. C.....	6, 711 72	107, 325 58	.....	.....	.....	.....	.....	114, 037 30
Fourth division Quartermaster General's office.....	Referred to Treasury Department for payment.	1, 501, 663 14	75, 529 40	.....	12, 766 76	12, 498 15	1, 056 30	2, 463 68	1, 606, 047 49
Total.....	.....	13, 315, 056 98	5, 268, 490 37	589, 490 65	3, 314, 495 10	71, 599 12	7, 394 75	27, 291 60	22, 593, 818 57

Respectfully submitted to the Quartermaster General:

ALEXANDER BLISS, Colonel Quartermaster's Dept. Brevet Colonel U. S. A. in charge Fourth Division

by Brigadier General L. B. Parsons. The sales on the Cumberland and Tennessee rivers were under direction of Brevet Major General J. L. Donaldson.

A table annexed shows the number, names, and description of steamboats, barges, &c., on hand at the beginning of the fiscal year, and the disposition made of them :

The total realized from sales of river steamboats and barges was	\$857,213 00
Total sales of coal belonging to river transportation department	295,682 92
Total.....	<u>1,152,895 92</u>

General Parsons, my predecessor, upon leaving the service, has deposited in this office a list of boats destroyed on the Mississippi river and its tributaries, from May 1, 1861, to the surrender of General Kirby Smith and the cessation of hostilities, June 2, 1865. It gives the name, description, date, place, and cause of loss, value and place of ownership, of three hundred and twenty-seven steamboats lost during this period; not only those belonging to or employed by the United States, and lost by incidents of war, but also those belonging to individuals, and lost from the incidents of navigation. The number of boats lost by incidents of war is shown to be 143, their total value \$3,900,000. The list will be valuable for reference in settlement of claims. A copy of it is appended.

#### STEAMBOATS CHARTERED AND IMPRESSED.

In this branch the reduction has kept pace with the decreasing requirements of the diminished army. In the earlier part of the fiscal year, the movement of the volunteer troops homeward, of the rebel prisoners to their homes, and the supply of the still considerable bodies of troops scattered through the southern States, rendered the employment of a large number of vessels necessary, especially upon the Mississippi and Missouri, the Ohio, the Cumberland and Tennessee, the Alabama, the White, Arkansas and Red rivers.

The annexed table exhibits a list of the vessels chartered and impressed during the fiscal year, as far as reported. The number of separate vessels is two hundred and sixty-two; several of them, however, were more than once taken into service. The total of their earnings is \$3,193,533 28.

No vessels have been reported as still in service under charter June 30, 1866.

#### TRANSPORTATION BY STEAMBOAT PER MAN, PER HEAD, AND PER POUND.

This method of transportation is the one which experience has shown to be far the most economical for government, wherever the nature of military operations will admit of it.

The benefit of the competition of the entire river steamboat interest of the country is thus secured to the government, and the expense incurred is a certain and definite one.

The favorable contracts which hitherto existed on the Mississippi river have been renewed, and similar contracts, at rates proportionately favorable for the localities, have been made for the transportation on the Missouri, Red, Arkansas, Alabama, and other rivers.

#### STAGE TRANSPORTATION.

The claims and accounts for this species of transportation, which have been presented to this office for the fiscal year, amount to \$109,195 66.

The total of payments for this service as far as reported is \$589,490 65.

The larger part of this kind of transportation, and by far the most costly, is



that on the overland routes across the plains. The high rates demanded by the companies which have a monopoly of the business, render it desirable that this mode of transportation should be resorted to as sparingly as possible. In all districts so thickly settled that for the movement of troops transportation is more advisable than marching, steam transportation is usually to be had. The absence of steam transportation would seem to be the proper indication that troops should march, yet so universal has it been to furnish transportation for troops that some commanding officers appear to have forgotten that troops can march.

#### WAGON TRANSPORTATION

is confined principally to the transportation of military stores for the supply of the forts and posts on the frontier and on the plains.

Contracts have been made for this transportation for the year at rates greatly below those of the preceding year.

The following are the rates on some of the principal routes :

Route No. 1. From the Missouri river to posts in northern Colorado, Nebraska, Dakota, Idaho, and Utah, per one hundred pounds per one hundred miles.....	\$1 45
Route No. 2. From the Missouri river to posts in southern Colorado, Kansas and New Mexico, per one hundred pounds per one hundred miles.....	1 38
Route No. 3. From Fort Union, New Mexico, to posts in that Territory, in Arizona, and in western Texas, per one hundred pounds per one hundred miles.....	1 79
From Indianola to San Antonio and Austin, Texas, per one hundred pounds per one hundred miles.....	1 14
The total number of pounds transported by wagon during the fiscal year, as far as reported, has been.....	81,489,322
The total payments for this transportation.....	\$3,314,495 10

The rapid extension of railroads in the direction of these routes will diminish the necessity for this slower, more expensive, and more uncertain method of transportation.

The Union Pacific railroad has already reached beyond Fort Kearney on the route from the Missouri river at Omaha, and beyond Fort Riley on the route from Kansas city, and is rapidly progressing westward on each of these routes.

As the transportation furnished by the different divisions of the Union Pacific railroad to government is to be paid for only one-half in cash the other half being credited upon their indebtedness to the government for the grants made by it to aid in their construction, the saving to government by the substitution of this method of transportation for the tedious and costly transportation by wagon will be great, and will increase as the railroad is pushed forward.

Wagon transportation will continue to be required, however, for the supply of the posts on lateral lines, and as new regions are developed, and new posts established, it must continue to be the pioneer in advance of the railroad.

Where wagon transportation is required, all the officers in the sections where it is employed unite in recommending transportation by the pound under contract as by far the most economical for government. •

I recommend, therefore, that on the principal routes for the supply of the western military posts, the means of transportation owned by government, with exception of such wagons as are absolutely required for local use at each post, should be disposed of, and that the transportation be performed under contracts annually let to the lowest responsible bidder.



## TOLLS ON TURNPIKES, FERRIES, BRIDGES, ETC.

The number of these accounts settled during the fiscal year has been large. How far the government was properly subject, in the movement of its armies and their supplies, to these charges, and at what rates compensation should be made, were questions which, though settled in the second year of the rebellion by the Secretary of War, were but imperfectly understood by the local officers in many parts of the country, and a large number of the accounts for these services remained, therefore, unsettled at the close of the war, and have since been presented.

In this office accounts of this class have been settled to the amount of \$16,018 19, and the total payments reported for these services for the year amount to \$106,285 47.

The government pays fifty per cent of the usual charges to the public as established by law or charter.

## THE MILITARY TELEGRAPH.

The report of Brevet Brigadier General Anson Stager, chief of United States military telegraph, exhibits the operations of this branch of the service for the fiscal year.

The retrenchment in this department was necessarily less rapid than in most others.

In addition to the military telegraph lines already operated by the government, the commercial lines of telegraph in the States which had been in rebellion were, after the surrender of the rebel armies, taken possession of by the United States, and controlled by the military telegraph department until December 1, 1865, when they were restored, under restrictions, to the respective companies.

The United States military telegraph lines and appurtenances within the States south of the Ohio river have been turned over to the several commercial telegraph companies owning the "telegraph patent right" within such territory, in consideration of the relinquishment by the telegraph companies of all claims against the United States for the use of their patent, for the use of their lines preceding their final restoration, and for all losses sustained by said companies by the exclusion of commercial business from those portions of their lines which have been in possession of the United States.

The United States military telegraph lines north of the Ohio river have been sold, as they ceased to be required, to the companies owning lines in the States in which the military telegraph lines were constructed.

The total amount received and expended for this service during the war was \$3,219,400; the amount expended for the fiscal year ending June 30, 1866, \$567,637.

The total number of miles of military telegraph lines constructed during the war was 15,389. The total number of miles which have been in operation during the fiscal year ending June 30, 1866, is 8,334.

At the close of the fiscal year two officers only remained on duty in this department, and these have since been mustered out.

The number of employes in the United States military telegraph department at the commencement of the fiscal year was . . . . . 1,437

The number, June 30, 1866 . . . . . 318

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The foregoing is a brief outline of the operations of the quartermaster's department throughout the United States, in the matter of inland transportation.

In addition to the general regulation and control exercised by the Quartermaster General through this division of the action of the officers of the quar-

termaster's department in providing and in paying for inland transportation, a large number of the accounts, and all the claims connected with this branch of the military service are sent to this office for settlement.

The following summary exhibits the business of this particular office for the fiscal year :

Number of communications received and recorded in this division during the fiscal year, 9,945, or 32 per day.

Number of communications made for the same period, 6,496, or 21 per day.

The number of claims and accounts alone for the fiscal year has been as follows :

Received.....	2,851
Disposed of.....	2,156

Remaining for action.....	695
---------------------------	-----

The accounts and claims (exclusive of officers' money accounts) received amount to.....	\$5, 067, 425 57½
Of which have been acted upon and disposed of.....	3, 771, 731 57

Leaving on hand July 1, 1866.....	1, 295, 694 00½
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Besides the above, the amount of officers' money accounts received from the money branch for examination by this branch for the year ending June 30, 1866, was.....	\$24, 997, 097 72
Amount examined and returned.....	22, 590, 852 19

Balance on hand July 1, 1866.....	2, 406, 245 53
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Adding these, the total of accounts received for the year has been.....	\$30, 064, 523 29
Total examined and disposed of.....	26, 362, 583 76

Total remaining for action.....	3,701, 939 53
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In most of the above classes of business there has been no apparent diminution for the last fiscal year. In some there is a decided increase. The mustering out of the local quartermasters throughout the country and discontinuance of their posts has a tendency to concentrate business at the principal office, and irregular and intricate claims to which attention was refused during active operations are now being brought out.

The claims presented to this division may be classified as follows :

1. For the hire and use, or for the seizure and value, of river steamboats and barges.

2. Railroad property seized, used, or destroyed by the United States authorities.

3. Claims for transportation, per man or pound, whether by rail, river, wagon, or stage.

4. Claims for ferriage, and turnpike and bridge tolls.

5. Wages due employés on, and supplies furnished to, United States river steamboats and barges.

6. Wages due employés on, and supplies furnished to, United States military railroads.

7. Wages due employés on United States military telegraphs, and services of telegraph companies.

Many of these claims require laborious investigation and involve perplexing questions. Those especially for the use or loss of steamboats and barges, and for property connected with United States military railroads, are numerous and not yet diminishing, heavy in amount and difficult of settlement.

An annexed table exhibits in greater detail the number and character of claims received, and the action taken thereon.

Respectfully, your obedient servant,

ALEXANDER BLISS,

*Colonel Q. M. Dept., Bvt. Col. U. S. A., in charge Fourth Division.*

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*List of papers accompanying annual report of Colonel Alexander Bliss, assistant quartermaster U. S. A., in charge Fourth Division Quartermaster General's office, for the fiscal year ending June 30, 1866.*

1. Statement showing number of troops and quantities of supplies transported during the fiscal year.
2. Total of payments made during the year for this transportation.
3. Statement showing the names, lengths, &c., of railroads operated by the United States during the war.
4. Statement of number of engines and cars purchased, built, captured, and disposition made of them.
5. Statement of cost of operating military railroads during the war.
6. Statement of sales of military railroad property for cash and on credit during the fiscal year.
7. Statement of the indebtedness of the several railroad companies for railroad materials sold them by the United States.
8. Statement of cost of materials used and labor performed for construction and maintenance of way on United States military railroads in the military division of the Mississippi.
9. Statement showing the steamboats, barges, &c., belonging to the United States at the beginning of the fiscal year, their disposition, and proceeds of their sale.
10. Statement of sales of coal belonging to transportation department on western rivers during the fiscal year ending June 30, 1866.
11. List of boats destroyed on the Mississippi river and its tributaries from May 1, 1861, to the surrender of General Kirby Smith and cessation of hostilities, June 2, 1865.
12. List of vessels chartered, impressed, and employed during the fiscal year.
13. Statement exhibiting in detail number and character of claims received in the fourth division during the fiscal year, and the action taken thereon.

## REPORT OF THE SECRETARY OF WAR.

No. 7.—Statement of the indebtedness of railroad companies for the purchase of railway material of the United States, on credit, under executive orders of August 8 and October 14, 1865, showing the appraised value of property transferred, with interest accrued thereon to June 30, 1866, amount payments made, and balance remaining due at that date.

Name of railroad company.	Value of property sold.	Interest to June 30, 1866.	Total debt, June 30, 1866.	Payments.	Amount due in interest and instalments, June 30, 1866.	Total balance due.
Will's Valley.....	\$30,248 52	\$1,487 44	\$31,735 96	\$1,300 00	\$10,299 16	\$30,435 96
Edgefield and Kentucky.....	114,772 86	5,513 12	120,285 98	.....	41,103 81	120,285 98
Macon and Brunswick.....	93,237 50	1,125 49	94,362 99	68,095 01	8,442 75	26,267 98
Montgomery and West Point.....	38,559 66	1,650 31	40,209 97	17,794 45	.....	22,415 52
Southwestern .....	46,159 89	.....	46,159 89	46,159 89	.....	.....
Rome .....	22,086 05	910 13	22,996 18	7,256 71	1,018 91	15,739 47
Memphis and Ohio.....	106,929 13	4,948 88	111,878 01	15,283 57	25,204 48	96,594 44
Memphis, Clarksville, and Louisville .....	337,993 72	14,330 92	352,324 64	.....	.....	352,324 64
Mississippi and Tennessee.....	127,750 52	5,111 99	132,862 51	30,401 95	1,325 56	102,460 56
Alabama and Florida.....	51,912 00	2,501 84	54,413 84	12,733 75	7,032 37	41,680 09
East Tennessee and Georgia.....	366,183 02	20,122 88	386,305 90	26,942 97	115,413 07	359,362 93
Muscogee.....	5,244 20	238 59	5,482 79	1,316 45	685 59	4,166 34
Macon and Western .....	83,638 15	.....	83,638 15	81,282 60	.....	2,355 55
Nashville and Chattanooga.....	1,566,551 73	85,377 57	1,651,929 30	158,725 23	.....	1,493,204 07
Tennessee and Alabama Central.....	84,143 00	4,336 52	88,479 52	25,071 06	378 18	63,408 46
Mobile and Ohio.....	505,143 70	19,290 36	524,434 06	222,068 61	3,003 95	302,365 45
Mobile and Great Northern .....	14,637 73	630 15	15,267 88	4,190 19	66 07	11,077 69
Memphis and Charleston .....	547,494 09	9,779 97	557,274 06	82,306 49	.....	474,967 57
Alabama and Tennessee River .....	183,276 49	8,608 08	191,884 57	15,340 18	54,406 27	176,544 39
Mississippi, Gainesville, and Tuscaloosa.....	33,476 39	1,705 72	35,182 11	1,106 40	11,758 12	34,075 71
Georgia Railroad and Banking Company .....	11,935 05	.....	11,935 05	11,935 05	.....	.....
New Orleans and Ohio.....	32,150 00	1,558 28	33,708 28	3,266 16	9,016 37	30,442 12
Nashville and Decatur .....	135,171 92	4,697 89	139,869 81	31,015 04	649 23	108,854 77
Western and Atlantic .....	472,944 66	25,817 14	498,761 80	.....	183,660 97	498,761 80
Central Southern .....	77,186 32	3,978 10	81,164 42	22,996 43	346 93	58,167 99
East Tennessee and Virginia.....	265,655 65	15,028 36	280,684 01	8,349 45	95,346 46	272,334 56
Southwestern Iron Company.....	32,515 00	.....	32,515 00	32,515 00	.....	.....
Adams Express Company .....	4,361 45	.....	4,361 45	4,361 45	.....	.....
Nashville and Northwestern .....	525,400 26	30,802 09	556,202 35	23,937 34	181,787 26	532,265 01

Mississippi Central.....	78,460 00	2,513 73	80,973 73	19,394 11	.....	61,579 62
New Orleans, Jackson, and Great Northern ..	167,815 58	6,673 61	174,489 39	57,359 13	3,373 45	117,130 26
Tennessee and Alabama.....	108,692 68	5,606 58	114,299 26	32,349 20	488 77	81,950 06
Selma and Meridian.....	146,327 92	5,329 87	151,657 79	58,088 49	.....	93,569 30
Virginia and Tennessee.....	102,880 00	3,912 86	106,792 86	.....	33,216 48	106,792 86
Wilmington and Weldon.....	110,000 00	2,622 67	112,622 67	10,836 07	.....	101,786 60
Atlantic and North Carolina.....	51,453 93	2,073 75	53,527 68	5,948 04	4,046 79	47,579 64
Western North Carolina.....	14,269 82	541 69	14,811 51	2,138 35	138 61	12,673 16
Petersburg .....	65,000 00	1,706 23	66,706 23	18,307 10	.....	48,399 13
Virginia Central.....	70,000 00	4,413 26	74,413 26	4,424 71	13,341 30	69,988 55
Richmond, Fredericksburg, and Potomac.....	7,449 27	.....	7,449 27	7,449 27	.....	.....
Orange and Alexandria.....	90,395 74	4,693 28	95,089 02	17,750 45	.....	77,338 57
Alexandria, Loudon, and Hampshire .....	62,592 96	2,284 62	64,877 58	.....	17,932 86	64,877 58
Manassas Gap.....	4,623 51	146 21	4,769 72	309 09	877 43	4,460 63
McMinnville and Manchester .....	20,310 00	552 43	20,862 43	.....	4,783 68	20,862 43
South Carolina .....	23,458 50	638 06	24,096 56	.....	5,525 26	24,096 56
Memphis and Little Rock.....	153,287 47	6,527 49	159,814 96	.....	.....	159,814 96
New Orleans, Opelousas, and Great Western..	113,773 45	3,460 19	117,233 64	.....	27,162 99	117,233 64
San Antonio and Mexican Gulf .....	48,775 19	949 49	49,724 68	.....	7,452 85	49,724 68
New Orleans, Jackson, and Great Northern ..	33,050 00	616 56	33,666 56	.....	5,668 60	33,666 56
Orange and Alexandria .....	28,500 00	1,271 41	29,771 41	9,979 74	.....	19,791 67
McMinnville and Manchester .....	26,198 54	.....	26,198 54	.....	.....	26,198 54
Total.....	7,444,073 22	326,086 01	7,770,159 23	1,200,085 18	874,954 58	6,570,074 05

Respectfully submitted to the Quartermaster General :

ALEXANDER BLISS,  
*Colonel Quartermaster's Dep't, Brevet Colonel U. S. A., in charge Fourth Division.*

# REPORT OF THE SECRETARY OF WAR.

Name of road.	From—	To—	Length, in miles.	Bridges by Government.	Miles laid by Government.			Materials.	Labor.	Contract work.	Total.
					Main track.	Sid'gs.	Total.				
Nashville and Chattanooga	Nashville.....	Chattanooga.....	151	21	727	19.	148.75	\$1,747,741 00	\$1,946,553 62	\$385,216 71	\$4,079,511 33
Shelbyville Branch*	Wartrace.....	Shelbyville.....	9								
McMinnville & Manchester†	Tullahoma.....	McMinnville.....	35								
Nashville and Decatur	Nashville.....	Decatur Junction...	120	24	275	2.65	34.15	416,480 00	692,835 91	549,326 13	1,658,642 04
Mount Pleasant Branch...	Columbia.....	Mount Pleasant.....	12								
Memphis and Charleston, (eastern division).....	Stevenson.....	Decatur Junction...	80	4	943	1.07	4.57	75,685 00	216,308 18	88,442 33	380,435 51
Chattanooga & Knoxville	Chattanooga.....	Knoxville.....	112	4	002	3.38	38.38	542,030 50	506,554 45	161,990 26	1,210,575 21
Cleveland & Dalton Branch	Cleveland.....	Dalton.....	27								
Nashville & Northwestern	Nashville.....	Johnsonville.....	78	21	320	4.25	50.75	489,779 12	798,829 73	182,789 11	1,471,397 96
Chattanooga and Atlanta.	Chattanooga.....	Atlanta.....	136	13	676	10.75	141.50	1,377,145 00	1,150,746 06	41,427 63	2,569,318 69
Rome Branch†	Kingsston.....	Rome.....	17								
Atlanta and Macon	Atlanta.....	Rough and Ready...	11								
Nashville and Clarksville.	Nashville.....	Clarksville.....	62	3	433	.13	1.76	18,210 00	148,455 92		166,665 92
Knoxville and Bristol...	Knoxville.....	Bristol.....	110	4	168	1.09	13.59	156,580 00	195,321 24		351,901 24
Rogersville Branch §	Junction.....	Rogersville.....	12								
Memphis and Charleston, (western division).....	Memphis.....	Pocahontas.....	75					134,194 77	72,893 12		207,087 89
Mississippi Central ¶	Grand Junction	Tallahatchie river...	48								
Mobile and Ohio.....	Columbus, Ky.	Crockett, Tenn.....	35					3,762 44	16,582 88		20,345 32
Louisville City**	River Landing.	L. & N. R. R. depot.	2								
Total.....			1,132	97	544	391.12	42.32	433.44	4,961,607 83	5,745,061 11	171,212,115,881 11

Respectfully submitted to the Quartermaster General:

ALEXANDER BLISS,  
Colonel Quartermaster's Dept., Brevet Colonel U. S. A., in charge Fourth Division.

\* Cost included in Nashville and Chattanooga railroad.  
† Cost included in Chattanooga and Knoxville railroad.  
‡ Cost included in Chattanooga and Atlanta railroad.

§ Used but for a few days.  
¶ Included in Knoxville and Bristol railroad.

‡ Cost included in Memphis and Charleston railroad, western division.  
\*\* Taken up by government.



RAIL AND RIVER TRANSPORTATION, FOURTH DIVISION.

List of steamboats, barges, &c., belonging to the United States on the Mississippi river and its tributaries, and at Mobile, Alabama, June 30, 1865, showing their description and the disposition made of them during the fiscal year ending June 30, 1866.

Name.	Class.	Tonnage—tons, 95lbs.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
No name.....	Wharf-boat ..	(*)	Parkersburg, W. Va.	.....	.....	Sold November 22, 1865....	\$310
Q. M. D.....	do.....	(*)	Catlettsburg, Ky....	Fair.....	\$4, 000	Sold November 27, 1865....	2, 400
U. S.....	do.....	145. 30	Gallipolis, Ohio.....	Good.....	4, 000	Sold November 25, 1865....	805
No name.....	Skiff.....	.....	do.....	.....	.....	do.....	5
D. C. Horton.....	St'n-wheel st'mboat.	152. 62	Cincinnati, Ohio....	Good.....	12, 000	Sold August 28, 1865.....	17, 000
General Crook.....	do.....	130. 67	do.....	do.....	8, 000	Sold August 29, 1865.....	7, 100
General Meigs.....	do.....	75. 03	do.....	do.....	5, 000	do.....	4, 000
U. S.....	Wharf-boat.....	153. 85	do.....	do.....	4, 000	do.....	3, 200
Capitola.....	Barge, model.....	(*)	do.....	do.....	3, 000	Sold November 30, 1865....	900
Horace.....	do.....	(*)	do.....	do.....	4, 000	do.....	.....
T. D. Horner.....	St'n-wheel st'mboat.	139	Louisville, Ky.....	.....	11, 000	Sold October 28, 1865....	10, 250
Ohio, or Nashville.....	Floating hospital.....	(*)	do.....	.....	.....	Sold November 4, 1865....	1, 600
Woolfolk.....	Barges, model.....	(*)	do.....	Sunk.....	50	Sold August 30, 1865.....	100
Charmer.....	do.....	(*)	do.....	Good.....	2, 000	Sold October 28, 1865....	1, 400
Clay Mine.....	do.....	(*)	do.....	do.....	1, 000	do.....	1, 305
Henry Clay.....	do.....	(*)	do.....	Condemned.....	150	do.....	125
Belle Dunleith.....	do.....	(*)	do.....	Unserviceable.....	100	Sold November 6, 1865....	175
Dennison No. 2.....	do.....	(*)	do.....	Sunk.....	.....	do.....	25
W. P. Horton, U. S. 56.....	do.....	(*)	do.....	do.....	.....	do.....	25
Tisheminga.....	do.....	(*)	do.....	.....	.....	do.....	200
Diamond.....	do.....	(*)	do.....	Unserviceable.....	50	do.....	.....
U. S. No. 53.....	do.....	(*)	do.....	Wreck.....	150	do.....	.....
Aurora No. 5, or No. 85.....	Barge, gunwale.....	.....	do.....	.....	.....	Sold August 30, 1865....	300

\* Unknown.

*List of steamboats, barges, &c.—Continued.*

Name.	Class.	Tonnage— 95ths.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
R. B. Smith No. 3	Barge, gunwale	.....	Louisville, Ky.	.....	.....	Sold August 30, 1865	\$610
Crittenden No. 22	do	.....	do	.....	.....	do	200
Aurora No. 52	do	.....	do	.....	\$150	do	325
Lake Erie No. 10	do	.....	do	Unserviceable	250	Sold October 28, 1865	455
B. U. S. No. 12	do	.....	do	do	40	do	85
U. S. No. 65	do	.....	do	do	40	do	75
U. S. No. 62	do	.....	do	do	40	do	75
O. & O. C. No. 4	do	.....	do	do	.....	do	100
W. H. B. No. 94	do	.....	do	do	400	do	700
Whale No. 27	do	.....	do	do	.....	do	400
Cheney, or U. S. No. 8	do	.....	do	do	75	do	80
C. No. 34, or No. 54	do	.....	do	do	75	do	50
U. S. B. No. 6	do	.....	do	do	200	do	480
U. S. B. No. 40	do	.....	do	do	400	do	900
Spencer No. 1	do	.....	do	do	400	do	800
Lake Erie No. 15	do	.....	do	do	250	do	330
E. C. & Co. No. 25, or U. S. No. 60.	do	.....	do	do	300	do	410
U. S. No. 23	do	.....	do	do	450	do	820
J. W. Waldron, for U. S. No. 16.	do	.....	do	do	250	do	335
W. Hudson No. 45	do	.....	do	do	400	do	625
U. S. No. 25	do	.....	do	do	130	do	130
Hawk No. 3	do	.....	do	do	100	do	400
Lucie, or Lusie Elvira	do	.....	do	do	50	do	50
Payne, or U. S. No. 13	do	.....	do	Wreck	150	do	50
J. S. McDonald	do	.....	do	Good	800	do	1,075
J. S. Gilmore	do	.....	do	do	800	do	1,200
O'Connor No. 1, or U. S. No. 74.	do	.....	do	.....	.....	do	1,235
Waldron, Fawcett & Co.	do	.....	do	.....	.....	do	215

D. B. No. 9, or U. S. No. 51	do.	do.	do.	do.	do.
E. C. & Co. No. 31	do.	do.	do.	do.	do.
Crittenden No. 31, or U. S. No. 33.	do.	do.	do.	do.	do.
R. B. Smith No. 4.	do.	do.	do.	do.	do.
Aurora No. 6.	do.	do.	do.	do.	do.
H. & P. No. 2.	do.	do.	do.	do.	do.
Eagle Coal Co.	do.	do.	do.	do.	do.
Float.	do.	do.	do.	do.	do.
Whale No. 20.	do.	do.	do.	do.	do.
E. C. & Co., or U. S. No. 6.	do.	do.	do.	do.	do.
E. C. & Co., or U. S. No. 20	do.	do.	do.	do.	do.
Aurora No. 97, or U. S. No. 7.	do.	do.	do.	do.	do.
R. C. & Co. No. 10, or U. S. No. 26.	do.	do.	do.	do.	do.
Aurora No. 52, or U. S. No. 25.	do.	do.	do.	do.	do.
Ormsby No. 7.	do.	do.	do.	do.	do.
Tigress No. 22	do.	do.	do.	do.	do.
U. S. No. 128.	do.	do.	do.	do.	do.
Y. C. R. & Co. No. 21, or U. S. No. 58.	do.	do.	do.	do.	do.
G. U. C. No. 17, or U. S. No. 32.	do.	do.	do.	do.	do.
U. S. No. 10.	do.	do.	do.	do.	do.
J. C. R. & Co. No. 28, or U. S. No. 23.	do.	do.	do.	do.	do.
Cyrus Miller No. 1.	do.	do.	do.	do.	do.
Whale No. 18.	do.	do.	do.	do.	do.
Red Rogen No. 8, or U. S. No. 51.	do.	do.	do.	do.	do.
W. H. B. No. 15, or U. S. No. 139.	do.	do.	do.	do.	do.
W. H. B. No. 103.	do.	do.	do.	do.	do.
No. 89.	do.	do.	do.	do.	do.
U. S. No. 15.	do.	do.	do.	do.	do.
Warner No. 6, U. S. No. 142.	do.	do.	do.	do.	do.
S. P. Haight, or U. S. No. 137	do.	do.	do.	do.	do.
Smith No. 2, or U. S. No. 153	do.	do.	do.	do.	do.
S. P. Haight, or U. S. No. 155	do.	do.	do.	do.	do.
W. H. B. No. 6, or U. S. No. 152.	do.	do.	do.	do.	do.
U. S. No. 140.	do.	do.	do.	do.	do.

*List of steamboats, barges, &c.—Continued.*

Name.	Class.	Tonnage—tons, 95ths.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
U. S. No. 120.....	Barge, gunwale.....	.....	Louisville, Ky.....	.....	.....	Sold November 6, 1865.....	\$700
U. S. No. 162.....	do.....	.....	do.....	.....	.....	do.....	200
Warner No. 3, U. S. No. 143.....	do.....	.....	do.....	.....	.....	do.....	600
A. T. Roe, or U. S. No. 150.....	do.....	.....	do.....	.....	.....	do.....	150
U. S. No. 30.....	do.....	.....	do.....	.....	.....	do.....	100
A. T. R. No. 6, or U. S. No. 157.....	do.....	.....	do.....	.....	.....	do.....	100
Yomker No. 2, or U. S. No. 156.....	do.....	.....	do.....	.....	.....	do.....	100
W. H. B. No. 45, U. S. No. 160.....	do.....	.....	do.....	.....	.....	do.....	100
W. H. B. No. 45, U. S. No. 136.....	do.....	.....	do.....	.....	.....	do.....	400
A. T. R. No. 1, U. S. No. 124.....	do.....	.....	do.....	.....	.....	do.....	300
U. S. No. 23.....	do.....	.....	do.....	.....	.....	do.....	700
Tigress No. 9.....	do.....	.....	do.....	.....	.....	do.....	50
B. No. 12.....	do.....	.....	do.....	.....	.....	do.....	50
Oil & Line No. 65.....	do.....	.....	do.....	.....	.....	do.....	50
Oil No. 62.....	do.....	.....	do.....	.....	.....	do.....	50
No name.....	Railing float.....	.....	do.....	Good.....	\$650 00	October 28, 1865.....	675
Do.....	Railroad float.....	.....	do.....	Unserviceable.....	50 00	do.....	100
Do.....	do.....	.....	do.....	do.....	40 00	do.....	50
Do.....	Coal float.....	.....	do.....	.....	.....	do.....	930
Do.....	do.....	.....	do.....	.....	.....	do.....	8
Do.....	Skiff.....	.....	do.....	.....	.....	Sold November 6, 1865.....	.....
Do.....	Bridge boat.....	.....	do.....	.....	.....	do.....	.....
Do.....	do.....	.....	do.....	.....	.....	Sold October 28, 1865.....	.....
Ohio.....	Side-wheel steamb't.....	197	do.....	.....	.....	do.....	2,900
Lue Eaves.....	Stern-wheel steamb't.....	50	New Albany, Ind.....	Bad wreck.....	2,000	Sold November 4, 1865.....	1,600
No name.....	Wharf-boat.....	(*)	Evansville, Ind.....	Serviceable.....	.....	Sold October 31, 1865.....	1,035
			do.....	do.....	.....	do.....	1,450

[illegible]

List of steamboats, barges, &c.—Continued.

Name.	Class.	Tonnage—tons, 95lbs.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
No name.....	Barge, gunwale.....	.....	Nashville, Tenn.....	.....	.....	Sold with coal Nov. 5, 1865.....	\$4,496
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
B No. 7.....	do.....	.....	do.....	.....	.....	Sold January 12, 1866.....	75
No name.....	Barge, wood.....	.....	do.....	.....	.....	.....	175
Do.....	do.....	.....	do.....	.....	.....	.....	175
Do.....	do.....	.....	do.....	.....	.....	.....	175
Do.....	do.....	.....	do.....	.....	.....	.....	175
Do.....	do.....	.....	do.....	.....	.....	.....	175
Do.....	do.....	.....	do.....	.....	.....	.....	175
Do.....	do.....	.....	do.....	.....	.....	.....	175
Do.....	do.....	.....	do.....	.....	.....	.....	100
Do.....	Pontoon.....	.....	do.....	.....	.....	.....	100
Do.....	Barge, wood.....	.....	Johnsonville, Tenn.....	.....	.....	Sold January 9, 1866.....	500
Knoxville.....	Side-wheel steamboat.....	36.78	Chattanooga, Tenn.....	Good.....	\$2,500	Sold October 23, 1865.....	3,025
Dunbar.....	do.....	(*)	do.....	Captured wreck.....	.....	Sold hull, October 23, 1865.....	15
Wauhatchee.....	do.....	89.76	do.....	Good, built by U. S.....	3,000	Sold December 13, 1865.....	2,250
Chickamauga.....	do.....	207.73	do.....	Built by U. S.....	17,000	Sold December 20, 1865.....	10,500
Sherman.....	Side-wheel gunboat.....	140.25	do.....	do.....	17,000	Sold January 1, 1866.....	4,000



[illegible]

No. 8.—Statement of cost of materials used and labor performed for construction and maintenance of way on United States military railroads in the military division of the Mississippi.

Name of road.	From—	To—	Length, miles.	Bridges built by Government, feet.	TRACK.			COST.			
					Miles laid by government.			Materials.	Labor.	Contract work.	Total.
					Main track.	Sid'gs.	Total.				
Nashville and Chattanooga	Nashville.....	Chattanooga.....	151	21,727	129.75	19.	148.75	\$1,747,741 00	\$1,946,553 62	\$385,216 71	\$4,079,511 33
Shelbyville Branch*	Wartrace.....	Shelbyville.....	9	.....	.....	.....	.....	.....	.....	.....	.....
McMinnville & Manches'r*	Tullahoma.....	McMinnville.....	35	.....	.....	.....	.....	.....	.....	.....	.....
Nashville and Decatur	Nashville.....	Decatur Junction...	120	24,275	31.50	2.65	34.15	416,480 00	692,835 91	549,326 13	1,658,642 04
Mount Pleasant Branch...	Columbia.....	Mount Pleasant....	12	.....	.....	.....	.....	.....	.....	.....	.....
Memphis and Charleston, (eastern division).....	Stevenson.....	Decatur Junction...	80	4,943	3.50	1.07	4.57	75,685 00	216,308 18	88,442 33	380,435 51
Chattanooga & Knoxville	Chattanooga...	Knoxville.....	112	4,002	.35	3.38	38.38	542,030 50	506,554 45	161,990 26	1,210,575 21
Cleveland & Dalton B'cht	Cleveland.....	Dalton.....	27	.....	.....	.....	.....	.....	.....	.....	.....
Nashville & Northwestern	Nashville.....	Johnsonville.....	78	21,320	46.50	4.25	50.75	489,779 12	798,829 73	182,789 11	1,471,397 96
Chattanooga and Atlanta.	Chattanooga...	Atlanta.....	136	13,676	130.75	10.75	141.50	1,377,145 00	1,150,746 06	41,427 63	2,569,318 69
Rome Branch†	Kingston.....	Rome.....	17	.....	.....	.....	.....	.....	.....	.....	.....
Atlanta and Macon	Atlanta.....	Rough and Ready..	11	.....	.....	.....	.....	.....	.....	.....	.....
Nashville and Clarksville.	Nashville.....	Clarksville.....	62	3,433	1.62	.13	1.75	18,210 00	148,455 92	.....	166,665 92
Knoxville and Bristol...	Knoxville.....	Bristol.....	110	4,168	12.50	1.09	13.59	156,580 00	195,321 24	.....	351,901 24
Rogersville Branch §	Junction.....	Rogersville.....	12	.....	.....	.....	.....	.....	.....	.....	.....
Memphis and Charleston, (western division).....	Memphis.....	Pocahontas.....	75	.....	.....	.....	.....	134,194 77	72,893 12	.....	207,087 89
Mississippi Central ¶	Grand Junction	Tallahatchie river..	48	.....	.....	.....	.....	.....	.....	.....	.....
Mobile and Ohio.....	Columbus, Ky.	Crockett, Tenn.....	35	.....	.....	.....	.....	3,762 44	16,582 88	.....	20,345 32
Louisville City**	River Landing.	L. & N. R. R. depot.	2	.....	.....	.....	.....	.....	.....	.....	.....
Total.....	.....	.....	1,132	97,544	391.12	42.32	433.44	4,961,607 83	5,745,081 11	1,409,192 17	12,115,881 11

Respectfully submitted to the Quartermaster General:

ALEXANDER BLISS,  
Colonel Quartermaster's Dep't, Brevet Colonel U. S. A., in charge Fourth Division.

\* Cost included in Nashville and Chattanooga railroad.  
† Cost included in Chattanooga and Knoxville railroad.  
‡ Cost included in Chattanooga and Atlanta railroad.  
§ Used but for a few days.  
|| Included in Knoxville and Bristol railroad.  
¶ Cost included in Memphis and Charleston railroad, western division.  
\*\* Taken up by government.

RAIL AND RIVER TRANSPORTATION, FOURTH DIVISION.

List of steamboats, barges, &c., belonging to the United States on the Mississippi river and its tributaries, and at Mobile, Alabama, June 30, 1865, showing their description and the disposition made of them during the fiscal year ending June 30, 1866.

Name.	Class.	Tonnage—tons, 95lbs.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
No name.....	Wharf-boat.....	(*)	Parkersburg, W. Va.	.....	.....	Sold November 22, 1865.....	\$310
Q. M. D.....	do.....	(*)	Catlettsburg, Ky....	Fair.....	\$4,000	Sold November 27, 1865....	2,400
U. S.....	do.....	145.30	Gallipolis, Ohio.....	Good.....	4,000	Sold November 25, 1865....	805
No name.....	Skiff.....	.....	do.....	.....	.....	do.....	5
D. C. Horton.....	St'n-wheel st'mboat.	152.62	Cincinnati, Ohio....	Good.....	12,000	Sold August 28, 1865.....	17,000
General Crook.....	do.....	130.67	do.....	do.....	8,000	Sold August 29, 1865....	7,100
General Meigs.....	do.....	75.03	do.....	do.....	5,000	do.....	4,000
U. S.....	Wharf-boat.....	153.85	do.....	do.....	4,000	do.....	3,200
Capitola.....	Barge, model.....	(*)	do.....	do.....	3,000	Sold November 30, 1865..	900
Horace.....	do.....	(*)	do.....	do.....	4,000	do.....	.....
T. D. Horner.....	St'n-wheel st'mboat.	139	Louisville, Ky.....	.....	11,000	Sold October 28, 1865....	10,250
Ohio, or Nashville.....	Floating hospital....	(*)	do.....	.....	.....	Sold November 4, 1865....	1,600
Woolfolk.....	Barges, model.....	(*)	do.....	Sunk.....	50	Sold August 30, 1865....	100
Charner.....	do.....	(*)	do.....	Good.....	2,000	Sold October 28, 1865....	1,400
Clay Mine.....	do.....	(*)	do.....	do.....	1,000	do.....	1,305
Henry Clay.....	do.....	(*)	do.....	Condemned.....	150	do.....	125
Belle Dunleith.....	do.....	(*)	do.....	Unserviceable.....	100	Sold November 6, 1865....	175
Dennison No. 2.....	do.....	(*)	do.....	Sunk.....	.....	do.....	25
W. P. Horton, U. S. 56.....	do.....	(*)	do.....	do.....	.....	do.....	25
Tisheminga.....	do.....	(*)	do.....	do.....	.....	do.....	200
Diamond.....	do.....	(*)	do.....	Unserviceable.....	50	do.....	.....
U. S. No. 53.....	do.....	(*)	do.....	Wreck.....	150	do.....	.....
Aurora No. 5, or No. 85.....	Barge, gunwale.....	.....	do.....	.....	.....	Sold August 30, 1865....	300

\* Unknown.

## List of steamboats, barges, &amp;c.—Continued.

Name.	Class.	Tonnage—tons, 95ths.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
R. B. Smith No. 3	Barge, gunwale		Louisville, Ky			Sold August 30, 1865	\$610
Crittenden No. 22	do		do			do	200
Aurora No. 52	do		do		\$150	do	325
Lake Erie No. 10	do		do	Unserviceable	250	Sold October 28, 1865	455
B. U. S. No. 12	do		do	do	40	do	85
U. S. No. 65	do		do	do	40	do	75
U. S. No. 62	do		do	do	40	do	75
O. & O. C. No. 4	do		do	do		do	100
W. H. B. No. 94	do		do	do	400	do	700
Whale No. 27	do		do	do		do	400
Cheney, or U. S. No. 8	do		do	do	75	do	80
C. No. 34, or No. 54	do		do	do	75	do	50
U. S. B. No. 6	do		do	do	200	do	480
U. S. B. No. 40	do		do	do	400	do	900
Spencer No. 1	do		do	do	400	do	800
Lake Erie No. 15	do		do	do	250	do	330
E. C. & Co. No. 25, or U. S. No. 60.	do		do	do	300	do	410
U. S. No. 23	do		do	do	450	do	820
J. W. Waldron, for U. S. No. 16.	do		do	do	250	do	335
W. Hudson No. 45	do		do	do	400	do	625
U. S. No. 25	do		do	do	130	do	130
Hawk No. 3	do		do	do	100	do	400
Lucie, or Lusie Elvira	do		do	do	50	do	50
Payne, or U. S. No. 13	do		do	Wreck	150	do	50
J. S. McDonald	do		do	Good	800	do	1,075
J. S. Gilmore	do		do	do	800	do	1,200
O'Connor No. 1, or U. S. No. 74.	do		do	do		do	235
Waldron, Fawcett & Co.	do		do	do		do	215

D. B. No. 9, or U. S. No. 51	do.	do.	do.	do.	do.	do.
E. C. & Co. No. 31	do.	do.	do.	do.	do.	do.
Crittenden No. 31, or U. S. No. 33.	do.	do.	do.	do.	do.	do.
R. B. Smith No. 4	do.	do.	do.	do.	do.	do.
Aurora No. 6	do.	do.	do.	do.	do.	do.
H. & P. No. 2	do.	do.	do.	do.	do.	do.
Eagle Coal Co.	do.	do.	do.	do.	do.	do.
Float	do.	do.	do.	do.	do.	do.
Whale No. 20	do.	do.	do.	do.	do.	do.
E. C. & Co., or U. S. No. 6	do.	do.	do.	do.	do.	do.
E. C. & Co., or U. S. No. 20	do.	do.	do.	do.	do.	do.
Aurora No. 97, or U. S. No. 7	do.	do.	do.	do.	do.	do.
R. C. & Co. No. 10, or U. S. No. 26.	do.	do.	do.	do.	do.	do.
Aurora No. 52, or U. S. No. 25	do.	do.	do.	do.	do.	do.
Ormsby No. 7	do.	do.	do.	do.	do.	do.
Tigress No. 22	do.	do.	do.	do.	do.	do.
U. S. No. 128	do.	do.	do.	do.	do.	do.
Y. C. R. & Co. No. 21, or U. S. No. 58.	do.	do.	do.	do.	do.	do.
G. U. C. No. 17, or U. S. No. 32	do.	do.	do.	do.	do.	do.
U. S. No. 10	do.	do.	do.	do.	do.	do.
J. C. R. & Co. No. 28, or U. S. No. 23.	do.	do.	do.	do.	do.	do.
Cyrus Miller No. 1	do.	do.	do.	do.	do.	do.
Whale No. 18	do.	do.	do.	do.	do.	do.
Red Rogen No. 8, or U. S. No. 71.	do.	do.	do.	do.	do.	do.
W. H. B. No. 15, or U. S. No. 139.	do.	do.	do.	do.	do.	do.
W. H. B. No. 103	do.	do.	do.	do.	do.	do.
No. 89	do.	do.	do.	do.	do.	do.
U. S. No. 15	do.	do.	do.	do.	do.	do.
Warner No. 6, U. S. No. 142	do.	do.	do.	do.	do.	do.
S. P. Haight, or U. S. No. 137	do.	do.	do.	do.	do.	do.
Smith No. 2, or U. S. No. 153	do.	do.	do.	do.	do.	do.
S. P. Haight, or U. S. No. 155	do.	do.	do.	do.	do.	do.
W. H. B. No. 6, or U. S. No. 152.	do.	do.	do.	do.	do.	do.
U. S. No. 140	do.	do.	do.	do.	do.	do.

## List of steamboats, barges, &amp;c.—Continued.

Name.	Class.	Tonnage—tons, 95ths.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
U. S. No. 120.....	Barge, gunwale.....	.....	Louisville, Ky.....	.....	.....	Sold November 6, 1865.....	\$700
U. S. No. 162.....	do.....	.....	do.....	.....	.....	do.....	200
Warner No. 3, U. S. No. 143.....	do.....	.....	do.....	.....	.....	do.....	600
A. T. Roe, or U. S. No. 150.....	do.....	.....	do.....	.....	.....	do.....	150
U. S. No. 30.....	do.....	.....	do.....	.....	.....	do.....	100
A. T. R. No. 6, or U. S. No. 157.....	do.....	.....	do.....	.....	.....	do.....	100
Yonker No. 2, or U. S. No. 156.....	do.....	.....	do.....	.....	.....	do.....	100
W. H. B. No. 45, U. S. No. 160.....	do.....	.....	do.....	.....	.....	do.....	100
W. H. B. No. 45, U. S. No. 136.....	do.....	.....	do.....	.....	.....	do.....	400
A. T. R. No. 1, U. S. No. 124.....	do.....	.....	do.....	.....	.....	do.....	300
U. S. No. 23.....	do.....	.....	do.....	.....	.....	do.....	700
Tigress No. 9.....	do.....	.....	do.....	.....	.....	do.....	50
B. No. 12.....	do.....	.....	do.....	.....	.....	do.....	50
Oil & Line No. 65.....	do.....	.....	do.....	.....	.....	do.....	50
Oil No. 62.....	do.....	.....	do.....	.....	.....	do.....	50
No name.....	Railing float.....	.....	do.....	Good.....	\$650 00	October 28, 1865.....	675
Do.....	Railroad float.....	.....	do.....	Unserviceable.....	50 00	do.....	100
Do.....	do.....	.....	do.....	do.....	40 00	do.....	50
Do.....	Coal float.....	.....	do.....	.....	.....	do.....	930
Do.....	do.....	.....	do.....	.....	.....	do.....	.....
Do.....	Skiff.....	.....	do.....	.....	.....	Sold November 6, 1865.....	.....
Do.....	Bridge boat.....	.....	do.....	.....	.....	do.....	.....
Do.....	do.....	.....	do.....	.....	.....	Sold October 28, 1865.....	.....
Ohio.....	Side-wheel steamboat.....	197	do.....	.....	.....	do.....	2,900
Lue Eaves.....	Stern-wheel steamboat.....	50	New Albany, Ind.....	Bad wreck.....	2,000	Sold November 4, 1865.....	1,600
No name.....	Wharf-boat.....	(*)	Evansville, Ind.....	Serviceable.....	.....	Sold October 31, 1865.....	1,035
			do.....	do.....	.....	do.....	1,450



[illegible]

## List of steamboats, barges, &amp;c.—Continued.

Name.	Class.	Tonnage—tons, 95ths..	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
No name.....	Barge, gunwale.....	.....	Nashville, Tenn.....	.....	.....	Sold with coal Nov. 5, 1865.	\$4,496
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
B No. 7.....	do.....	.....	do.....	.....	.....	Sold with coal, Nov. 24, 1865	75 175 175 175 175 175 175 100 100 500 3,025 15 2,250 10,500 4,000
No name.....	Barge, wood.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	Pontoon.....	.....	do.....	.....	.....	do.....	100
Do.....	Barge, wood.....	.....	Johnsonville, Tenn.....	.....	.....	Sold January 9, 1866.....	500
Knoxville.....	Side-wheel steamb't.	36.78	Chattanooga, Tenn.....	Good.....	\$2,500	Sold October 23, 1865.....	3,025
Dunbar.....	do.....	(*)	do.....	Captured wreck.....	.....	Sold hull, October 23, 1865.....	15
Wauhatchee.....	do.....	89.76	do.....	Good, built by U. S.....	3,000	Sold December 13, 1865.....	2,250
Chickamauga.....	do.....	207.73	do.....	Built by U. S.....	17,000	Sold December 20, 1865.....	10,500
Sherman.....	Side-wheel gunboat.	140.25	do.....	do.....	17,000	Sold January 1, 1866.....	4,000

Burnside	do.	204.8	do.	do.	20,000	Sold January 4, 1866.	7,700
Thomas	do.	140.25	do.	do.	17,000	Sold January 5, 1866.	3,800
Grant	do.	190.54	do.	do.	20,000	Sold January 5, 1866.	5,000
Kingston	Stern-wheel steam'b't.	93.86	do.	do.	4,000	Sold October 11, 1865.	3,000
Resaca	do.	182.42	do.	Burned and cond'd.	2,000	Sold hull and machinery October 23, 1865.	1,000
Chattanooga	do.	89.74	do.	Good	7,000	Sold November 11, 1865.	5,250
Clinch	do.	(*)	do.	do.	4,000	Sold November 27, 1865.	5,500
Paint Rock	do.	199.24	do.	Captured wreck.	4,000	Turned over to Treasury Department Aug. 1, 1865.	
Missionary	do.	115.45	do.	Good, built by U. S.	7,000	Sold December 31, 1865.	3,000
Bridgeport	do.	184.23	do.	Built by U. S.	13,000	Sold January 3, 1866.	6,600
Atlanta	do.	221.63	do.	Unfinished	13,000	Sold January 4, 1866.	6,350
Kenesaw	do.	166.20	do.	Good	15,000	Sold January 5, 1866.	4,400
Lookout	do.	193.6	do.	do.	10,000	do.	3,500
Stone River	do.	214.55	do.	do.	13,500	Sold February 21, 1866.	7,000
Holston	do.	86.14	do.	do. built by U. S.	7,000	Sold February 12, 1866.	4,000
Emory	Ferry-boat.	(*)	do.	Unserviceable		Sold October 23, 1865.	1,000
No name	Barge, model.	80.79	do.	Unf'd, built by U. S.	2,000	Sold January 4, 1866.	580
Do	Barge, gunwale.		do.	Unserviceable		Sold November 28, 1865.	155
Do	do.		do.	do.		do.	100
Do	do.		do.	do.	100	do.	90
Do	do.		do.	do.	100	do.	85
Do	do.		do.	do.	100	do.	75
Do	do.		do.	do.	100	do.	75
Do	do.		do.	do.	100	do.	75
Do	do.		do.	do.		do.	25
Do	do.		Paducah, Ky	do.		do.	
Do	do.		do.	do.		do.	
Do	do.		do.	do.		do.	
Do	do.		do.	do.		do.	
Do	do.		do.	do.		do.	
Do	do.		do.	do.		do.	
Do	do.		do.	do.		do.	
Do	do.		do.	do.		do.	
Horton No. 56	Barge, model.	(*)	do.	Worthless		Sold December 5, 1865.	15
United States No. 72	Barge, gunwale.		do.	do.		do.	300
Gilmore No. 33	do.		do.	do.		do.	200
No name	do.		do.	do.		Sold January 25, 1866	180
Do	Flatboat		do.	do.		do.	
Do	Skiff		do.	do.	7	do.	
Do	Coal-boat		Smithland, Ky.	do.	75	do.	

List of steamboats, barges, &c.—Continued.

Name.	Class.	Tonnage—tons, 95lbs.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received
No name.....	Coal-boat.....	.....	Smithland, Ky.....	.....	\$75	.....	.....
Do.....	Flatboat.....	.....	do.....	.....	100	.....	.....
J. H. Baldwin.....	Side-wheel steamb't.....	350	St. Louis, Mo.....	Good.....	12,000	Sold September 5, 1865.....	\$12,100
D. A. January.....	do.....	700	do.....	Serviceable.....	20,000	Sold November 4, 1865.....	16,000
Izetta.....	do.....	476.28	do.....	Good.....	22,000	do.....	6,800
John Raine.....	do.....	620.33	do.....	Ordinary.....	17,000	do.....	11,100
Metropolitan.....	do.....	386.37	do.....	Unseaworthy.....	6,500	do.....	5,175
Transfer.....	do.....	112.16	do.....	Good.....	7,000	do.....	5,000
R. C. Woods.....	do.....	787.19	do.....	Unserviceable.....	18,000	do.....	7,100
Nebraska.....	do.....	673.75	do.....	Needs repairing.....	15,000	do.....	7,000
Baltic.....	do.....	593.15	do.....	.....	.....	do.....	16,000
Champion No. 2.....	do.....	250	do.....	Ordinary.....	3,000	Sold November 20, 1865.....	3,000
Autocrat.....	do.....	862.10	do.....	do.....	27,000	Sold December 11, 1865.....	12,000
E. H. Fairchild.....	do.....	651.35	do.....	do.....	20,000	Sold December 20, 1865.....	5,500
Lioness.....	Stern-wheel steamb't.....	233.41	do.....	Good.....	14,000	Sold September 5, 1865.....	18,600
Alone.....	do.....	205	do.....	do.....	12,000	do.....	11,050
Annie Jacobs.....	do.....	206.5	do.....	do.....	15,000	do.....	13,500
Newsboy.....	do.....	65	do.....	Serviceable.....	5,000	do.....	5,000
Porter.....	do.....	109	do.....	Good.....	10,000	do.....	10,000
Jennie Hopkins.....	do.....	250	do.....	Serviceable.....	14,000	do.....	11,500
Carrie Jacobs.....	do.....	156	do.....	Good.....	15,000	do.....	13,000
Lotus.....	do.....	150	do.....	do.....	10,000	do.....	11,000
Virginia Barton.....	do.....	150	do.....	do.....	14,000	do.....	13,250
Victor No. 2.....	do.....	90.74	do.....	Serviceable.....	5,000	do.....	4,000
J. S. Pringle.....	do.....	318	do.....	do.....	10,000	do.....	8,000
Ad. Hines.....	do.....	112.28	do.....	Good.....	6,000	Sold November 4, 1865.....	5,100
Silver Lake No. 2.....	do.....	134	do.....	Serviceable.....	8,000	Sold January 15, 1866.....	6,400
J. C. Runney.....	Screw tug.....	60	do.....	Bad.....	3,000	Sold September 5, 1865.....	3,000
Little Giant.....	do.....	52.58	do.....	Good.....	3,000	do.....	4,250

Mattie Cabler	Tow boat	124	do	Serviceable	10,000	do	10,650
Huron	do	124	do	do	do	do	10,000
Michigan	Wharf-boat	136.80	do	do	12,000	do	10,000
J. C. Irvin	do	107.83	do	Good	6,000	do	6,000
Crescent City	do	849.1	do	Serviceable	8,000	do	6,400
No name	do		do	do	do	Sold March 10, 1866	4,000
Pleasant	Barge, model	(*)	do	do	do	Sold November 4, 1865	3,400
A. Phillips	do	(*)	do	Good	2,500	do	2,000
Rowena	do	(*)	do	Fair	2,200	do	1,150
Chantie	do	(*)	do	Good	3,000	do	2,000
Victor, or Pine Grove	do	(*)	do	Bad	1,000	do	1,600
Rosa	do	(*)	do	Good	2,700	do	1,300
Rob Grier	do	(*)	do	do	2,600	do	2,550
Vulcan No. 7	do	(*)	do	do	4,000	do	4,750
J. C. Gaul	do	(*)	do	do	do	do	2,057
Frank Dougherty	do	(*)	do	Good	3,000	do	2,950
Vulcan No. 1	do	(*)	do	do	3,000	do	3,100
Dutchess	do	(*)	do	do	2,000	do	900
Keokuk No. 2	do	(*)	do	do	do	do	675
Roanoke	do	(*)	do	do	do	do	2,800
Eureka	do	(*)	do	Fair	2,000	do	1,250
Cartwright	do	(*)	do	do	do	do	1,625
Fanny	do	(*)	do	Sunk	do	do	125
Dearborne	do	(*)	do	Condemned	500	do	125
Fannie	do	(*)	do	Sunk	do	do	50
Autocrat	do	(*)	do	Fair	1,500	do	do
Eugene	do	(*)	do	Good	3,000	do	do
Southerner	do	(*)	do	Burnt wreck	do	do	do
Guthrie	do	(*)	do	do	do	do	do
Haigh	do	(*)	do	do	do	do	do
Hercules	do	(*)	do	do	do	do	do
Vulcan No. 4	do	135.61	do	Good	2,500	Sold November 4, 1865	1,650
Vulcan No. 2	do	210.30	do	do	do	do	3,300
Trenton	do	100.45	do	do	2,700	do	550
Glendale	do	173.85	do	do	do	do	875
New St. Louis	do	159.82	do	do	2,500	do	925
Archie	do	137.70	do	do	3,000	do	1,050
William Tell	do	159.79	do	do	2,500	do	125
Larimer	do	148.93	do	do	3,000	do	2,350
Hartford	do	135.45	do	do	3,000	do	1,650
Keokuk No. 1	do	110.4	do	Serviceable	900	do	1,050

## List of steamboats, barges, &amp;c.—Continued.

Name .	Class.	Tonnage—tons, 95ths.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
Vulcan No. 3.....	Barge, model .....	138.61	St. Louis, Mo .....	.....	.....	Sold November 4, 1865 .....	\$59
General Sheridan .....	do.....	122.83	do.....	Good.....	\$2,000	Sold December 6, 1865.....	
Vulcan No. 5.....	do.....	(*)	do.....	do.....	3,000	do.....	
Jessie.....	do.....	(*)	do.....	.....	.....	do.....	
Dan Risley.....	do.....	(*)	do.....	.....	.....	do.....	
Ed. Kline .....	do.....	(*)	do.....	Good.....	2,800	do.....	
Susie.....	do.....	(*)	do.....	do.....	2,500	do.....	
Annie.....	do.....	(*)	do.....	.....	.....	do.....	
C. J. Caffrey.....	do.....	142.10	do.....	Good.....	3,000	do.....	11,000
Ben Gerrish .....	do.....	142.10	do.....	do.....	3,000	do.....	
M. M. B. No. 10 .....	do.....	.....	do.....	do.....	.....	do.....	
No name.....	Barge, gunwale .....	.....	do.....	.....	.....	do.....	
Do.....	Steamboat stage .....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	Yawl.....	.....	do.....	.....	.....	do.....	
Anna.....	Barge, model .....	105.86	do.....	Serviceable.. ..	1,800	Sold November 4, 1865.....	1,150
Vulcan No. 6 .....	do.....	122.93	do.....	Good.....	.....	Sold December 8, 1865.....	1,000
U. S. No. 58 .....	Barge, gunwale .....	.....	do.....	.....	.....	Sold September 5, 1865. ....	705
U. S. No. 25 .....	do.....	.....	do.....	.....	.....	do.....	640
U. S. No. 150 .....	do.....	.....	do.....	.....	.....	do.....	640
U. S. No. 133.....	do.....	.....	do.....	.....	.....	do.....	640
J. Walton No. 34.....	do.....	.....	do.....	.....	.....	do.....	640
McDonald No. 20.....	do.....	.....	do.....	.....	.....	do.....	675
McDonald No. 27.....	do.....	.....	do.....	.....	.....	do.....	665
McDonald No. 44.....	do.....	.....	do.....	.....	.....	do.....	700
McDonald No. 22.....	do.....	.....	do.....	.....	.....	do.....	695
McDonald No. 26.....	do.....	.....	do.....	.....	.....	do.....	690
U. S. B. No. 39 .....	do.....	.....	do.....	.....	500	Sold October 21, 1865.....	780
U. S. No. 29.....	do.....	.....	do.....	.....	.....	Sold November 4, 1865.....	850
J. C. R. No. 29.....	do.....	.....	do.....	.....	.....	do.....	850



[illegible]

REPORT OF THE SECRETARY OF WAR.

Name.	Class.	Tonnage—tons. 95ths.	Location.	Condition.	Estimated value June 30, 186	Disposition, with date.	Amount received
Nixon No. 2.....	Barge, gunwale.....	.....	Cairo, Ill.....	.....	.....	Sold November 1, 1865 ....	\$105
Walton No. 41.....	do.....	.....	do.....	.....	.....	do.....	460
Fleming No. 4, or U. S. No. 57.....	do.....	.....	do.....	.....	.....	do.....	460
U. S. No. 36.....	do.....	.....	do.....	.....	.....	do.....	495
H. Kennedy No. 1, or U. S. No. 103.....	do.....	.....	do.....	.....	.....	do.....	235
R. & W. No. 1, or U. S. No. 64.....	do.....	.....	do.....	.....	.....	do.....	495
U. S. No. 31.....	do.....	.....	do.....	.....	.....	do.....	235
Walton No. 52.....	do.....	.....	do.....	.....	.....	do.....	495
Walton No. 59.....	do.....	.....	do.....	.....	.....	do.....	375
Ormsby No. 5, or U. S. No. 68.....	do.....	.....	do.....	.....	.....	do.....	375
Fawn No. 1.....	do.....	.....	do.....	Good.....	\$600	do.....	235
Mitchell No. 1.....	do.....	.....	do.....	do.....	600	do.....	235
Walton and Fawcett No. 77.....	do.....	.....	do.....	Old.....	125	do.....	240
U. S. No. 60.....	do.....	.....	do.....	.....	.....	do.....	665
McDonald No. 6 or U. S. No. 69.....	do.....	.....	do.....	.....	.....	do.....	665
S. C. B. No. 1, or U. S. No. 83.....	do.....	.....	do.....	.....	.....	do.....	665
Aurora No. 77, or U. S. No. 44.....	do.....	.....	do.....	.....	.....	do.....	50
U. S. No. 34.....	do.....	.....	do.....	Good.....	600	do.....	310
U. S. No. 79.....	do.....	.....	do.....	.....	.....	do.....	665
U. S. No. 115.....	do.....	.....	do.....	.....	.....	do.....	665
Storm No. 27.....	do.....	.....	do.....	.....	.....	do.....	665
G. W. C. No. 33.....	do.....	.....	do.....	Old and rotten.....	150	do.....	50
J. Walton No. 55.....	do.....	.....	do.....	.....	.....	do.....	310
U. S. No. 56.....	do.....	.....	do.....	Good.....	600	do.....	510
R. C. & Co., or U. S. No. 26.....	do.....	.....	do.....	.....	.....	do.....	510
Fawcett No. 1.....	do.....	.....	do.....	Good.....	600	do.....	235
Fawcett No. 19.....	do.....	.....	do.....	.....	.....	do.....	195

[illegible]

*List of steamboats, barges, &c.—Continued.*

Name.	Class.	Tonnage—tons, 95lbs.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
U. S. B. No. 116.....	Unknown.....	.....	Cairo, Ill.....	Good.....	\$600	.....	.....
W. H. B. No. 82.....	do.....	.....	do.....	do.....	600	.....	.....
Emma.....	Barge, model.....	.....	do.....	.....	.....	Turned over to Sanitary Commission for their use.	.....
No name.....	Skiff.....	.....	do.....	.....	15	.....	.....
Do.....	do.....	.....	do.....	.....	15	.....	.....
Do.....	do.....	.....	do.....	.....	15	.....	.....
Michigan.....	Wharf-boat.....	(*)	Memphis, Tenn.....	.....	.....	.....	.....
No name.....	Barge, gunwale.....	.....	do.....	.....	.....	Sold December 8, 1865.....	\$1,800
Do.....	do.....	.....	do.....	.....	.....	Sold November 14, 1865.....	\$1,800
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Do.....	do.....	.....	do.....	.....	.....	do.....	
Adam Sprangle.....	Barge, model.....	126.86	do.....	Good.....	3,000	.....	.....
Laura.....	do.....	125.93	do.....	do.....	3,000	.....	.....
No name.....	Wharf-boat.....	425.75	Helena, Ark.....	Good, captured.....	12,000	.....	.....
Do.....	Barge, unknown.....	.....	do.....	.....	.....	Turned over to Treasury Department, Jan., 1866.	230
Do.....	Coal barge.....	.....	do.....	.....	75	Sold January 2, 1866.....	270
Do.....	do.....	.....	do.....	.....	75	do.....	
Do.....	Barge, gunwale.....	.....	Mouth White river.....	.....	.....	do.....	.....
Do.....	do.....	.....	do.....	.....	.....	Sold November 24, 1865	1,250
Do.....	do.....	.....	do.....	.....	.....		
Do.....	do.....	.....	do.....	.....	.....		
Do.....	do.....	.....	do.....	.....	.....		
Do.....	do.....	.....	do.....	.....	.....	.....	.....
Do.....	Coal barge.....	.....	do.....	.....	75	.....	.....
Chancellor.....	Wharf-boat.....	564.75	Duval's Bluff, Ark.....	Good.....	6,000	.....	.....
Davenport.....	Side-wheel steam-b't.....	159.15	Little Rock, Ark.....	Sunk, engine good.....	6,000	.....	.....

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*List of steamboats, barges, &c—Continued.*

Name.	Class.	Tonnage—tons, 50ths.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
No name.....	Coal-boat.....	.....	Vicksburg, Miss.....	.....	\$100	.....	.....
Do.....	do.....	.....	do.....	.....	100	.....	.....
Do.....	do.....	.....	do.....	.....	100	.....	.....
Do.....	do.....	.....	do.....	.....	100	.....	.....
Do.....	do.....	.....	do.....	.....	100	.....	.....
Do.....	do.....	.....	do.....	.....	100	.....	.....
Do.....	do.....	.....	do.....	.....	100	.....	.....
Do.....	do.....	.....	do.....	.....	100	.....	.....
Do.....	Yawl-boat.....	.....	do.....	.....	100	.....	.....
Altamont.....	Stern-wheel steamb't	292.10	Natchez, Miss.....	Bad.....	6,000	Sold February 28, 1866.....	\$2,100
No name.....	Wharf-boat.....	700	do.....	Unserviceable.....	200	Sold October 21, 1865.....	810
Molly.....	Barge, model.....	310.40	do.....	Good.....	5,000	.....	.....
No name.....	Barge, gunwale.....	.....	do.....	.....	.....	Sold with coal Nov. 8, 1865.....	.....
Do.....	do.....	.....	do.....	.....	.....	.....	.....
Do.....	do.....	.....	do.....	.....	.....	.....	.....
Do.....	do.....	.....	do.....	.....	.....	.....	.....
Do.....	do.....	.....	do.....	.....	.....	.....	.....
Do.....	do.....	.....	do.....	.....	.....	.....	.....
Do.....	Coal-boat.....	.....	do.....	.....	50	.....	.....
Do.....	do.....	.....	do.....	.....	50	.....	.....
Do.....	do.....	.....	do.....	.....	50	.....	.....
Diana.....	Side-wheel steamb't.	300	Port Hudson, Miss.....	Fair.....	25,000	Sold February 28, 1866.....	5,050
Colonel Mulligan.....	Barge, model.....	(*)	do.....	Good.....	3,000	.....	.....
No name.....	Coal-boat.....	.....	do.....	.....	.....	.....	.....
Do.....	do.....	.....	Baton Rouge, La.....	Worthless.....	100	.....	.....
Do.....	do.....	.....	do.....	do.....	100	.....	.....
W. B. Savory.....	Side-wheel steamb't.	62.38	New Orleans.....	Ordinary.....	3,500	Sold October 4, 1865.....	2,800
Switzerland.....	do.....	519.19	do.....	Good.....	7,000	Sold October 21, 1865.....	6,000
Laurel Hill.....	do.....	783.27	do.....	Bad.....	15,000	Turned over to Treas. De- partment Nov., 1865.....	.....
General Banks.....	do.....	374	do.....	.....	15,000	Sold October 21, 1865.....	15,000



N. W. Thomas	do	511.55	Unseaworthy	5,000	do	1,400
Ohio Belle	do	472	Fair	20,000	Sold January 4, 1866	6,650
Colonel Holcomb	do	220.47	Building	30,000	Sold February 28, 1866	11,500
St. Charles	do	557.77	Ordinary	15,000	do	1,900
Starlight	do	351.21	Good	20,000	Retur'd to owners by Pres.	
Illinois	do	682	Unseaworthy	3,000	U. S. Sept. 12, 1865	
Iberville	do	505.45	Good	25,000	Sold June, 1865	
Mustang	do	178	Ordinary	9,000	Turned over to Treas. Department Nov., 1865	
Kentucky	do	394	Sunk in Red river		In service June 30, 1866	
A. G. Brown	do	229.85	Good	13,000	Ordered returned to owners May 19, 1866	
Baltic	Stern-wheel steam b't.	113.38	Serviceable	4,500	Sold October 4, 1865	3,800
Dick Fulton No. 2	do	118.35	Bad	5,000	do	4,500
Alpha	do	250	Serviceable	28,000	Sold October 6, 1865	14,000
Ida May	do	220	do	11,500	Sold October 7, 1865	9,200
Colonel Chapin	do	(*)	do	10,000	do	6,900
Jennie Rogers	do	346.67	Badly damaged	14,000	Sold October 21, 1865	12,000
Cornie	do	88	Serviceable	10,000	Sold October 31, 1865	
Colonel Chandler	do	20.37	Ordinary	3,000	Sold December 14, 1865	4,050
Lizzie Davis	do	(*)	Serviceable	3,000	do	2,000
Colonel Benedict	do	181.17	Good	18,000	Sold February 28, 1866	11,500
Adriatic	do	492	Sunk in Miss. river			
Emma	do	452	Sunk and wrecked			
Captain Pitkins	Screw tug	(*)	New	5,000	Sold February 2, 1866	2,500
Leviathan	do	334.79	Good	30,000	Sold October 7, 1865	4,800
Gladiator	do	171.33	Serviceable	16,000	Sold October 21, 1865	19,000
America	do	418.49	Good	20,000	do	14,000
Beunty Banks	do	32.11	Good (built by U. S.)	3,000	Sold November 28, 1865	12,500
Admiral	do	163.43	Bad	9,000	Sold January 4, 1866	3,000
George E. Tyler	do	116.63	do	10,000	do	7,100
Perry	do	154.90	Good	18,000	do	5,100
Belle Darlington	do	84.28	do	11,000	Sold February 14, 1866	11,000
No name	do	(*)	Building		Sold February 28, 1866	4,100
Kepper	Centre-wheel steam b't	81.40	Good	14,000		
General Ransom	do	104.5	Unfinished	25,000	Sold February 28, 1866	8,750
Colonel Culburn	do	90.90	Unfit for transport	20,000	do	8,750
Abbey	Barge, model	191.32	Good	3,100	Sold August 19, 1865	
No. 10	do	59.65	Bad	800	do	
No. 11	do	37.55	do	650	do	

*List of steamboats, barges, &c.—Continued.*

Name.	Class.	Tonnage—tons, 55lbs.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
Arch .....	Barge, gunwale.....	.....	New Orleans .....	.....	\$12,000 .....	Sold December 12, 1865.....	\$1,200 .....
No. 3.....	do.....	.....	do.....	.....	.....	Sold October 9, 1865.....	320 .....
No. 9.....	do.....	.....	do.....	.....	.....	Sold October 11, 1865.....	400 .....
Josephine.....	Schooner.....	390 .....	do.....	.....	500 .....	Sold October 4, 1865.....	460 .....
Rosalie .....	Canal-boat .....	.....	do.....	.....	100 .....	.....	.....
No name.....	Metallic-boat .....	.....	do.....	.....	50 .....	Sold September 26, 1865 .....	.....
Do.....	Sailboat.....	.....	do.....	.....	500 .....	Sold September 6, 1865 .....	.....
Do.....	Yawl-boat.....	.....	do.....	.....	25 .....	Sold September 26, 1865 .....	.....
Do.....	do.....	.....	do.....	.....	25 .....	do.....	.....
Do.....	do.....	.....	do.....	.....	25 .....	do.....	.....
Do.....	do.....	.....	do.....	.....	25 .....	do.....	.....
Do.....	do.....	.....	do.....	.....	25 .....	do.....	.....
Do.....	do.....	.....	do.....	.....	20 .....	.....	.....
Do.....	Skiff.....	.....	do.....	.....	20 .....	.....	.....
Do.....	Skiff.....	.....	do.....	.....	20 .....	.....	.....
Do.....	Skiff.....	.....	do.....	.....	20 .....	.....	.....
Do.....	Skiff.....	.....	do.....	.....	20 .....	.....	.....
Do.....	Skiff.....	.....	do.....	.....	20 .....	.....	.....
Warrior.....	Side-wheel st'mboat .....	.....	do.....	.....	20 .....	.....	.....
James Battle .....	do.....	466.82 .....	Mobile, Alabama.....	Bad .....	8,000 .....	Sold October 13, 1865.....	6,400 .....
J. M. Brown.....	do.....	621.65 .....	do.....	Ordinary .....	9,000 .....	Sold October 14, 1865.....	7,500 .....
J. D. Swain.....	do.....	338.65 .....	do.....	Wrec'd, Mobile bay .....	6,000 .....	.....	.....
Colonel Cowles.....	do.....	226.90 .....	do.....	Bad .....	.....	In service June 30, 1866 .....	.....
Red Chief.....	do.....	(*) .....	do.....	Sunk, Ala. river .....	.....	.....	.....
R. B. Hamilton.....	St'n-wheel st'mboat .....	(*) .....	do.....	.....	5,000 .....	Sold October 14, 1865.....	7,000 .....
Blossom .....	do.....	198.90 .....	do.....	Sunk, Mobile bay .....	6,000 .....	.....	.....
Alph. Cutting .....	Screw tug.....	54.9 .....	do.....	Good .....	5,500 .....	Sold October 14, 1865.....	5,000 .....
Baton Rouge.....	do.....	95.5 .....	do.....	do.....	11,000 .....	Sold October 16, 1865.....	5,500 .....
Ford.....	Wharf-boat .....	(*) .....	do.....	.....	.....	Sold October 21, 1865.....	810 .....
W. H. B. No. 34.....	Barge, model .....	243.40 .....	do.....	Good .....	.....	.....	.....
	Barge, gunwale .....	.....	do.....	.....	3,000 .....	Sold October 14, 1865.....	700 .....

[illegible]

List of steamboats, barges, &c —Continued.

Name.	Class.	Tonnage—tons, 95lbs.	Location.	Condition.	Estimated value June 30, 1865.	Disposition, with date.	Amount received.
No name.....	Yawl-boat.....	.....	Mobile, Alabama.....	Captured .....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	Sectional dock.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....
Do.....	do.....	.....	do.....	do.....	.....	.....	.....

Class.	Total number.	Number sold.	Number turned over to Treasury Dep't.	Number re-turned to original owners.	Remaining in service June 30, 1866.	Details of sale not received.	Amount received for those sold.	Total amount received.
Side-wheel steamers.....	42	33	2	2	†2	†4	\$224, 850 00	\$684, 415 00
Stern-wheel steamers.....	53	46	1			‡6	321, 390 00	
Centre-wheel steamers.....	3	2				1	17, 550 00	
Screw tugs.....	15	14				1	98, 810 00	
Ferry-boats.....	1	1					1, 000 00	
Steamboat hulls.....	3	2				1	165 00	
Tow-boats.....	2	2					20, 650 00	
Total steamers.....	119	100	3	2	2	13		164, 828 00
Model barges.....	137	114				23	95, 737 00	
Gunwale barges.....	147	138				9	56, 981 00	
Wrecking barges.....	1	1					3, 700 00	
Coal barges.....	20	19				1	8, 410 00	
Total barges.....	305	272				33		7, 970 00
Coal-boats.....	42	*5				37	3, 240 00	
Dredge-boats.....	2	2					2, 900 00	
Metallic yawl and sail boats.....	54	2					57 00	
Railroad floats.....	4	3				52	1, 705 00	
Skiffs.....	5	1				1	8 00	
Flats.....	2	1				4	60 00	
Total small boats.....	109	14				95		857, 213 00
Grand total.....	533	386	3	2	2	141		

\*With coal.

†Steamer J. D. Swain returned to owners Aug. 18, 1866.

‡3 wrecks.

§Wrecks.

Respectfully submitted to the Quartermaster General:

ALEXANDER BLISS,  
Colonel Quartermaster's Department, in charge of Fourth Division.

No. 10.—Statement of sales of coal belonging to the transportation department on the western rivers during the fiscal year ending June 30, 1866.

Station.	Date of sale.	Quantity of coal sold.	Price per bushel.	Total amount received.
	1865.			
Pittsburg, Pa .....	Sept. 19	40,000 bushels.....	\$0 12	\$4,800 00
New Albany, Ind....	Sept. 15	800 bushels sunk.....	18	144 00
New Albany, Ind....	Nov. 3	2,287 bushels nut coal.....	18	411 66
New Albany, Ind....	do.....	150,033 bushels Pittsburg coal ....	20	30,006 60
New Albany, Ind....	Dec. 21	5,300 bushels Hawesville coal...	12½	662 50
Hawesville, Ky.....	Dec. 14	66,298 bushels Hawesville coal...	12	7,955 76
Hawesville, Ky.....	Dec. 21	1,803 bushels coal sunk.....	16	288 48
Bowling Green, Ky ..	Nov. 17	20,610 bushels Green river.....	-----	1,000 00
Bowling Green, Ky ..	do.....	12,523 bushels coal .....	20	2,504 60
Bowling Green, Ky..	Nov. 28	18,398 bushels coal .....	20	3,679 60
Bowling Green, Ky..	Dec. 14	11,177 bushels coal .....	20	2,235 40
Nashville, Tenn .....	-----	176,188 bushels Pittsburg coal ....	39½	61,869 89
Smithland, Ky .....	-----	1 barge and lot sunken coal.....	-----	207 20
Cairo, Ill.....	Nov. 1	26,456 bushels Hawesville coal...	13	3,571 56
Cairo, Ill.....	do.....	9,170 bushels Pittsburg coal....	18	1,650 60
Cairo, Ill.....	do.....	111,590 bushels Pittsburg coal ....	21½	23,991 85
Cairo, Ill.....	do.....	24,331 bushels Pittsburg coal ....	25	6,082 75
Memphis, Tenn.....	Nov. 14	79,960 bushels Pittsburg coal....	26	20,789 60
Memphis, Tenn.....	do.....	67,475 bushels Hawesville coal ..	18	12,145 50
Mouth White river,Ark	Nov. 6	29,199 bushels Pittsburg coal ....	27	7,883 73
Vicksburg, Miss.....	Oct. 28	36,000 bushels coal .....	9	3,240 00
Vicksburg, Miss.....	do .....	344,863 bushels Pittsburg coal....	28	96,561 64
Natchez, Miss .....	Nov. 8	19,357 bushels.....	-----	-----
Natchez, Miss .....	do.....	1 barge coal sunk.....	-----	4,000 00
Total .....	-----	1,253,818 bushels of coal .....	*23 7/8	295,682 00

\* Average.

Respectfully submitted to the Quartermaster General:  
ALEXANDER BLISS,  
Colonel Quartermaster's Dep't, in charge of Fourth Division.



Name of steamboat.	Tons.	Date of loss.	Alleged value.	Where owned.	Where lost and cause of loss.
Union, side.....	250	May 2, 1861	\$9, 000	Green River, Ky.....	New Albany, Indiana; burned by accident. Near Washington, Ohio river; striking snag.
Equality, stern.....	150	.....do.....	3, 000	Louisville, Ky.....	
General Pike, side.....	342	May 6, 1861	18, 000	.....do.....	New Orleans, Louisiana; burned by accident.
Republic, side.....	767	.....do.....	4, 500	New Orleans, La.....	
Editor, side.....	500	.....do.....	6, 000	.....do.....	
Madison, side.....	800	.....do.....	20, 000	Cincinnati, Ohio.....	
Grenada, side.....	400	.....do.....	30, 000	New Orleans, La.....	
Dollie Webb, stern.....	275	.....do.....	10, 000	Wheeling, Va.....	
Telegram, side.....	600	.....do.....	20, 000	New Orleans, La.....	
Conqueror, side.....	450	.....do.....	50, 000	.....do.....	
Baltic, side.....	500	.....do.....	50, 000	.....do.....	
Grey Eagle, side.....	700	May 9, 1861	35, 000	Galena, Ill.....	
John Gault, stern.....	400	May —, 1861	18, 000	Louisville, Ky.....	Rock Island, Illinois; collision with bridge. Cairo, Illinois; sunk accidentally.
Greenville, side.....	70	June 6, 1861	5, 000	Evansville, Ind.....	Wabash river; striking snag.
Medora, stern.....	300	June 14, 1861	6, 500	St. Louis, Mo.....	Jeffersonville, Indiana; burned accidentally.
New Era, stern.....	275	June 22, 1861	5, 000	.....do.....	St. Louis, Missouri; burned accidentally.
Lehigh, stern.....	450	June 23, 1861	10, 000	Cincinnati, Ohio.....	Cincinnati, Ohio; burned accidentally.
Chippewa, stern.....	350	.....do.....	15, 000	St. Louis, Mo.....	Head water Missouri river; burned accidentally; was freighted with stores for Fort Benton and the Rocky mountains, and was completely destroyed by the explosion of 237 kegs of powder, a part of her cargo, 125 miles above the mouth of the Yellowstone river.
William Henry, stern.....	350	July 2, 1861	8, 000	Arkansas.....	Arkansas river; sunk accidentally.
Eagle, stern.....	280	July 15, 1861	10, 000	Jefferson City, Mo.....	Alexandria, Missouri; captured and sunk by rebels.
Andy Fulton, stern.....	240	July 23, 1861	7, 000	Pittsburg, Pa.....	Carrollton, Louisiana; burned accidentally.
Carrier, side.....	400	Aug. 1, 1861	10, 000	St. Louis, Mo.....	St. Charles Bend, Missouri river; striking snag.
Belmont, ferry-boat.....	300	Aug. 5, 1861	8, 000	Belmont, Mo.....	Near St. Joseph, Missouri; sunk accidentally.
Hesperian, side.....	450	Aug. 19, 1861	25, 000	St. Louis, Mo.....	St. Joseph, Missouri; burned accidentally.
R. W. Powell, side.....	400	Aug. 20, 1861	25, 000	New Orleans, La.....	Near Plaquemine, Louisiana; striking snag.
W. M. Morrison, side.....	1400	Aug. —, 1861	40, 000	St. Louis, Mo.....	New Orleans, Louisiana; burned accidentally.
J. G. Morrow, ferry-boat.....	400	Sept. 1, 1861	10, 000	St. Joseph, Mo.....	Upper Missouri river; striking snag.
Lancaster, (3,) side.....	375	Sept. 3, 1861	15, 000	Madison, Ind.....	Buffington Chute, Ohio river; striking snag.

List of boats destroyed, &c.—Continued.

Name of boat.	Tons.	Date of loss.	Alleged value.	Where owned.	Where lost and cause of loss.
E. M. Ryland, side .....	500	Oct. 8, 1861	\$15, 000	St. Louis, Mo.....	St. Louis, Missouri; burned; supposed incendiary fire.
John McNeil, stern.....	200	Oct. 20, 1861	5, 000	U. S. government.....	Howard Bend, Missouri river; striking snag.
W. J. Maclay, stern.....	475	Nov. 19, 1861	10, 000	Pittsburg, Pa.....	Twelve miles below St. Louis; striking snag.
Messenger, stern.....	400	Dec. 7, 1861	25, 000	Cincinnati, Ohio.....	Eight miles below Rochester, Ohio; striking snag.
Ashland, stern.....	400	.....do.....	6, 500	Maysville, Ky.....	Near Pittsburg, Pennsylvania; burned accidentally.
James Montgomery, side .....	800	Dec. 11, 1861	30, 000	Louisville, Ky.....	Devil's island, Mississippi river; striking snag.
Advance, stern .....	300	Jan. 28, 1862	7, 500	Pittsburg, Pa.....	Near Matamoras, Ohio river; exploded boiler and burned.
Lynn Boyd, stern.....	300	Feb. 9, 1862	7, 000	Paducah, Ky.....	{ Mouth Duck creek, Tennessee river; burned. These three
Appleton Belle, side.....	300	.....do.....	14, 000	Evansville, Ind.....	{ boats were in the confederate service, and were burned by
Time, side.....	550	.....do.....	20, 000	Louisville, Ky.....	{ the confederates on the approach of the U. S. forces, together
Samuel Orr, stern.....	350	.....do.....	12, 000	Evansville, Ind.....	{ with \$100,000 worth of stores, to prevent their capture.
Sam. Kirkman, stern.....	430	.....do.....	8, 000	Nashville, Tenn.....	{ Ten miles above Tennessee bridge; burned by confederates on
Julius H. Smith, stern .....	450	.....do.....	28, 000	Tennessee.....	{ approach of U. S. gunboats and troops, to prevent capture.
.	.	.	.	.	{ Tennessee river; blown up. This boat was in the rebel service
.	.	.	.	.	{ on the Tennessee river, and was blown up by Captain Roddy,
.	.	.	.	.	{ her commander, to prevent her capture by two U. S. gunboats
.	.	.	.	.	{ coming up the river.
James Wood, side.....	700	Feb. 23, 1862	50, 000	Nashville, Tenn.....	{ Nashville, Tennessee; burned. Two fine New Orleans packets
James Johnson, side .....	650	.....do.....	50, 000	.....do.....	{ in process of being altered into gunboats, burned by the rebels
Minnetonka, stern .....	200	.....do.....	10, 000	.....do.....	{ on the approach of U. S. forces to Nashville to prevent capture.
Cambridge, stern .....	260	.....do.....	7, 000	Pittsburg, Pa.....	{ Nashville, Tennessee; burned and sunk. At the capture of
Economy, stern.....	375	Feb. 27, 1862	17, 000	.....do.....	{ Nashville this boat was set on fire near the city and set afloat
Prince, side.....	400	.....do.....	26, 000	Confederate government..	{ expecting to burn other boats thereby; she was, however,
Minnesota Belle, side.....	250	Mar. 28, 1862	6, 000	St. Louis, Mo.....	{ scuttled and sunk before reaching them.
Governor Moore, side.....	400	April 2, 1862	17, 000	Confederate government..	{ Dudley's Bend, White river; striking snag.
Jackson, stern.....	84	.....do.....	8, 000	.....do.....	{ Near Smithland, Cumberland river; striking snag.
Lovell, side.....	500	.....do.....	30, 000	.....do.....	{ New Madrid, Missouri; striking coal barge. In rebel service,
.	.	.	.	.	{ loaded with government stores.
.	.	.	.	.	{ Liverpool, Illinois river; striking snag.
.	.	.	.	.	{ Battle of New Orleans; destroyed. Blown up by her comman-
.	.	.	.	.	{ der to prevent her capture by U. S. forces.

Battle of New Orleans; destroyed. These twelve boats were destroyed by the United States forces at the battle and capture of New Orleans.	Warrior, side.....	200	.....do.....	.....do.....	.....do.....
	Reoluto, stern.....	100	.....do.....	.....do.....	.....do.....
	Reliance, side.....	500	.....do.....	.....do.....	.....do.....
	Breckinridge, side.....	500	.....do.....	.....do.....	.....do.....
	Stonewall Jackson, side.....	800	.....do.....	.....do.....	.....do.....
	Steamship Galveston, side.....	500	.....do.....	.....do.....	.....do.....
	Anglo-Norman, side.....	200	.....do.....	.....do.....	.....do.....
	Louisiana, (1 gun,) stern.....	500	.....do.....	.....do.....	.....do.....
	Manassas, iron-clad ram.....	800	.....do.....	.....do.....	.....do.....
	McRae, (8 guns,) sloop.....	700	.....do.....	.....do.....	.....do.....
Columbus, Kentucky; burned. These two boats were loaded with ordnance stores, and believed to have been burned by a confederate emissary.	Philadelphia, side.....	400	April 5, 1862	Cincinnati, Ohio.....	20,000
	Admiral, side.....	1400	.....do.....	St. Louis, Mo.....	12,000
	Kanawha Valley, stern.....	150	April 6, 1862	New Orleans, La.....	12,000
	John Simmonds, side.....	600	.....do.....	.....do.....	30,000
Island No. 10, Mississippi river; capsized in a storm.	Yazoo, side.....	175	April 7, 1862	.....do.....	40,000
	Mohawk, stern.....	150	.....do.....	Pittsburg, Pa.....	6,000
	Grampus, stern.....	300	.....do.....	.....do.....	7,500
	Winchester, side.....	475	.....do.....	Memphis, Tenn.....	20,000
Ashland, Kentucky; collided with Commodore Perry. Little river, Missouri; captured and burned by a detachment of Colonel Daniels's 1st Wisconsin cavalry, at Hornersville, Missouri, on a branch of the St. Francis river; was loaded with freight for confederate troops.	Enniece, stern.....	100	April 25, 1862	U. S. government.....	4,000
	D. B. Miller, stern.....	140	May 28, 1862	Louisville, Ky.....	8,000
Tennessee river; sunk by United States forces to prevent her capture by confederates.	Baton Rouge, stern.....	500	May —, 1862	Cincinnati, Ohio.....	9,000
	Jeff. Thompson, side.....	500	June 6, 1862	Confederate government.....	40,000
Memphis, Tennessee; sunk. These two confederate gunboats were sunk by the naval and ram fleets in the fight resulting in the capture of Memphis.	Beauregard, side.....	700	.....do.....	.....do.....	40,000
	Capital, side.....	500	June 26, 1862	.....do.....	18,000
Liverpool, Yazoo river; burned and sunk. These four boats were scuttled and burned by the confederates to obstruct the channel, or to prevent capture by the United States gunboats Monarch and Lancaster, proceeding up the Yazoo river in pursuit.	W. H. Jay, (formerly New Orleans,) propeller.....	500	.....do.....	New Orleans, La.....	40,000
	Van Dorn, propeller.....	1000	.....do.....	Confederate government.....	40,000
Louisville, Kentucky; explosion of boiler. Baton Rouge, Louisiana; blown up. This celebrated and powerful ram was destroyed by her commander to prevent her capture by the United States gunboat Essex.	Lady Polk, (formerly Ed. Howard,) side.....	430	.....do.....	.....do.....	30,000
	Commodore Perry, stern.....	900	Aug. 2, 1862	Pittsburg, Pa.....	9,000
	Arkansas, (rebel ram,) side.....		Aug. 4, 1862	Confederate government.....	140,000

*List of boats destroyed, &c.—Continued*

Name of boat.	Tons.	Date of loss.	Alleged value.	Where owned.	Where lost and cause of loss.
Sally Wood, stern .....	300	July —, 1862	\$18,000	St. Louis, Mo .....	Island No. 82, Mississippi river; burned. This boat was attacked by the confederates with cannon, a shot from which cut her steam-pipe, when she was forced to surrender, and was burned.
Callie, stern .....	300	Aug. 9, 1862	35,000	.....do.....	{ Mouth of Duck creek, in Tennessee river; burned. These boats were lying at the bank changing cargoes, when they were surprised and boarded by guerillas, under Roddy, who burned the boats and paroled the crews.
Skylark, side .....	900	.....do.....	50,000	.....do.....	
Acacia, stern .....	200	Aug. 20, 1862	5,000	Memphis, Tenn.....	
Silver Lake, side .....	170	Sept. 3, 1862	6,500	St. Louis, Mo .....	White river, near mouth of Little Red river; striking snag; 100 lives lost.
W. B. Terry, stern .....	200	Sept. 13, 1862	6,000	U. S. government.....	Lime creek, Osage river; burned by confederates.
					Tennessee river; sunk by confederates. Used as a gun or despatch boat by General Grant; captured by a band of guerillas who were headed by Napier, who ran her on the bar opposite Napier's house, at Duck creek, and, after removing the guns with which she was armed, sunk her.
Hannibal City, side .....	800	Sept. 4, 1862	35,000	St. Louis, Mo .....	Louisiana, Missouri; striking snag.
Eagle, stern .....	70	Sept. 19, 1862	5,000	Warsaw, Mo .....	Near La Rouge, Mississippi river; collided with Arizona.
W. H. Russell, side .....	750	Oct. 27, 1862	15,000	St. Louis, Mo .....	{ St. Louis, Missouri; burned accidentally. These four boats were burned at the levee, at midday, by an accidental fire.
H. D. Bacon, side .....	600	.....do.....	24,000	.....do.....	
Estella, side .....	700	.....do.....	29,000	Pittsburg, Pa.....	
A. McDowell, side .....	750	.....do.....	29,000	St. Louis, Mo .....	Near Memphis, Tennessee; burned accidentally.
Swallow, stern .....	350	Oct. —, 1862	6,000	.....do.....	
Eugene, side .....	650	Nov. 1, 1862	20,000	.....do.....	
					Plum Point, Mississippi river; sunk accidentally by striking the old wreck of the Eliza.
Denmark, side .....	600	.....do.....	9,000	.....do.....	Atlas Landing, Mississippi river; striking snag.
Laclede, side .....	400	Nov. 18, 1862	7,000	.....do.....	Near Chester, Illinois; striking snag.
Star, stern .....	95	Nov. 29, 1862	5,000	New Orleans, La .....	Near Plaquemine, Louisiana; captured and burned by a party of guerillas.
Mingo, stern .....	300	Nov. —, 1862	14,000	U. S. government.....	Cape Girardeau, Missouri; burned accidentally.
Lake City, stern .....	400	Dec. 8, 1862	15,000	St. Louis, Mo .....	Carson's Landing, White river; burned by guerillas who surprised her as she was landing, and destroyed both boat and cargo. The passengers and crew were detained as prisoners.

Badger State, stern.....	300	Dec. 14, 1862	8, 000	St. Louis, Mo.....	Upper Mississippi river; striking snag.
Rose Douglas, stern.....	220	Dec. 27, 1862	25, 000	Pittsburg, Pa.....	Van Buren, Ark.; captured and burned by U. S. forces.
Van Buren, side.....	175	.....do.....	6, 500	Little Rock, Ark.....	
Violet, stern.....	250	.....do.....	10, 000	Fort Smith, Ark.....	Fort Smith, Ark.; burned by confederates to prevent capture. Near Napoleon, Ark.; burned. This boat was loaded with ordnance stores and a large mail for General Sherman's army; was captured by the treachery of her master, and afterwards burned at Pocahontas, in White river, on the approach of the expedition under General Gorman, to prevent recapture. Steubenville, Ohio; striking snag.
Fred. Natrebe, stern.....	300	.....do.....	30, 000	Memphis, Tenn.....	
Key West, stern.....	400	.....do.....	20, 000	Little Rock, Ark.....	
Arkansas, stern.....	300	.....do.....	18, 000	Des Arc, Ark.....	
Blue Wing, side.....	170	Dec. 28, 1862	8, 000	St. Louis, Mo.....	
Reliance, stern.....	300	Dec. —, 1862	4, 000	Millersport, Ohio.....	White river; sunk by confederates. These six boats were sunk to prevent their falling into the hands of the United States forces, and also to obstruct the channel.
Eliza G., side.....	750	.....do.....	15, 000	Memphis, Tenn.....	
Palnetto, propeller.....	250	.....do.....	6, 000	Confederate government.....	
Lady Walton, stern.....	300	.....do.....	15, 000	Memphis, Tenn.....	
Dr. Buffington, side.....	500	.....do.....	26, 000	New Orleans, La.....	
Mary Patterson, stern.....	130	.....do.....	5, 000	Jacksonport, Ark.....	
Mariposa, stern.....	200	.....do.....	8, 000	Memphis, Tenn.....	
Era, (7,) stern.....	100	.....do.....	15, 000	Pittsburg, Pa.....	
Neptune, stern.....	250	1862.....	9, 000	Pittsburg, Pa.....	
Fanny Harris, stern.....	167	1862.....	7, 000	Galena, Ill.....	
Mary Crane, stern.....	240	Jan. 8, 1863	10, 000	St. Louis, Mo.....	Near Fort Smith, Ark.; burned by confed'tes to prevent capture. Opposite Memphis; striking snag. Near Hastings, Minn.; sunk by ice. Betsey's Landing, Cumberland river; captured and burned by guerillas while wooding, after killing the mate and wounding several of the crew.
Jacob Hassleman, stern.....	250	.....do.....	8, 500	St. Louis, Mo.....	Near Memphis, Tenn.; burned by guerillas. This boat went to the bank opposite Memphis to repair machinery, where she was boarded by guerillas, who run her to a point above the city and burned her.
Vicksburg, side.....	1000	Feb. 8, 1863	58, 000	Confederate government.....	Vicksburg, Miss.; sunk. This boat during a heavy gale of wind broke from her fastenings, drifted into the hands of the United States forces below the city, and soon after sunk, March 29.
Hercules, side.....	250	Feb. 18, 1863	6, 500	Pittsburg, Pa.....	Near Cairo, Ill.; burned by guerillas.
35th Parallel, side.....	800	Mar. 13, 1863	40, 000	Van Buren, Ark.....	Tallahatchie river; burned. Run ashore and burned by confederates to prevent her capture by the United States Yazoo Pass expedition; had on board 300 bales of cotton.
Star of the West, side..... (Ocean steamship.)	1300	.....do.....	150, 000	New York.....	Mouth of Tallahatchie river; sunk by confederates. This is the steamship that was sent to the relief of Fort Sumter; was captured by the confederate General Earl Van Dorn on the Gulf coast in 1861, and used for the transportation of troops, and was sunk to obstruct the channel.

*List of boats destroyed, &c.—Continued.*

Name of boat.	Tons.	Date of loss.	Alleged value.	Where owned.	Where lost and cause of loss.
Saxonia, propeller.....	75	April 8, 1863	\$6,000	Cincinnati, Ohio.....	Cumberland river; burned by guerillas. } Both of these boats Cumberland river; burned by guerillas. } were captured and destroyed by a band of guerillas, 1,200 strong, with two pieces of artillery, under Woodward, who, after the surrender of the boats, took out eight negroes and shot them by the light of a lantern. Captain Lane, of the Lovell, expressing strong disapprobation of the act, was taken and shot in the same cold- blooded manner.
R. M. C. Lovell, stern.....	100	.....do.....	4,500	.....do.....	
Priores, side.....	600	April 16, 1863	80,000	Madison, Ind.....	Near Cincinnati, Ohio; burned accidentally. Vicksburg, Miss.; burned. } These boats were destroyed by Vicksburg, Miss.; sunk. } the confederate batteries while passing Vicksburg under the orders of General Grant. The Tigress received fourteen shots, making a hole in her hull four feet in length, which reduced her to a sinking condition; she was consequently run ashore two miles below Vicksburg and abandoned.
Henry Clay, side.....	400	April 22, 1863	60,000	Cincinnati, Ohio.....	
Tigress, side.....	500	.....do.....	36,000	Cairo, Ill.....	
Natchez, side.....	1200	April —, 1863	100,000	Confederate government.	Yazoo river; burned by accident. Was intended for service as a confederate gunboat, (cotton-clad;) while en route for Fort Pemberton, sixty-five miles below Yazoo City. accidentally caught fire and was destroyed.
Minnesota, stern.....	250	May 3, 1863	15,000	St. Louis, Mo., and Chi- cago, Ill.	Near Greenville, Miss.; burned by confederates.
Majestic, side.....	1300	May 6, 1863	20,000	Pittsburg, Pa.....	Near Hickman, Ky.; burned accidentally. Yazoo city; sunk by confederates to obstruct channel.
Mobile, side, confed. iron-clad..	400	May 20, 1863	110,000	Confederate government.	
Scotland, side.....	1000	May 22, 1863	25,000	Vicksburg, Miss.....	Fifteen miles below Fort Pemberton; scuttled and sunk. These four boats were seized by the confederates at the commence- ment of hostilities, and sunk 15 miles below Fort Pemberton to obstruct the channel; the upper works were burned off by Lieut. Walker, United States navy, May 25, 1863. Yazoo river; captured and burned by Lieut. Walker, United States navy, 140 miles above mouth of Sunflower river. Quiver river; scuttled and burned. These two boats were sunk by the rebels to prevent capture, and afterward burned by Lieut. Walker, United States navy.
Golden Age, side.....	1000	.....do.....	30,000	New Orleans, La.....	
John Walsh, side.....	1200	.....do.....	70,000	St. Louis, Mo.....	
R. J. Lackland, side.....	1500	.....do.....	50,000	.....do.....	
Hope, stern.....	300	May 25, 1863	3,000	Yazoo City.....	
Emma Betts, stern.....	150	.....do.....	9,000	.....do.....	
Dew Drop, stern.....	300	.....do.....	17,000	.....do.....	



Argo, side.....	600	.....do.....	23, 000	Cincinnati, Ohio.....	Seventy-five miles up Sunflower river; burned by Lieut. John G. Walker, United States navy, same as last.
Horizon, stern.....	600	May —, 1863	20, 000	Pittsburg, Pa.....	Grand Gulf, Miss.; sunk by collision with steamer Moderator; one section of Chicago Board of Trade battery was lost.
Lebanon No. 2, stern.....	550	June 24, 1863	23, 000	Cincinnati, Ohio.....	Hurricane island; striking snag.
Ben. McCulloch, stern.....	150	July 14, 1863	13, 000	.....do.....	Tchula lake; scuttled and burned by confed'tes to prevent capture.
Peytona, side.....	1000	.....do.....	35, 000	Louisville, Ky.....	Yazoo river; sunk accidentally at Eureka plantation, 25 miles above Vicksburg.
Magnolia, side.....	1800	.....do.....	22, 000	New Orleans, La.....	Near Yazoo City; sunk. These six boats were run up the Yazoo river by the confederates to prevent capture, and destroyed under orders of General Joseph E. Johnston on hearing of the surrender of Vicksburg.
B. P. Cheeney, side.....	600	.....do.....	24, 000	.....do.....	
Capital, (towboat,) side.....	160	.....do.....	9, 000	.....do.....	
Magenta, side.....	1200	.....do.....	75, 000	.....do.....	
J. F. Pasgoud, side.....	700	.....do.....	75, 000	.....do.....	
Prince of Wales, side.....	1000	.....do.....	40, 000	Memphis, Tenn.....	French Point, Yazoo river; sunk by the confederates.
Mary E. Keene, side.....	1000	July 15, 1863	90, 000	New Orleans, La.....	
Arcadia, side.....	600	July 17, 1863	22, 000	.....do.....	Do.
Edward J. Gay, side.....	1200	.....do.....	60, 000	St. Louis, Mo.....	Yallabusha river. These three boats were sunk to prev'nt capture.
Ferd. Kennett, side.....	1200	.....do.....	60, 000	.....do.....	Near Yazoo City; sunk by the confederates to obstruct channel.
Cotton Plant, side.....	300	July 22, 1863	15, 000	Memphis, Tenn.....	Vicksburg, Miss.; sunk on the Tallahatchie river by the confederates to prevent capture; was afterward raised by United States government, and soon after again sunk in a storm at Vicksburg.
J. M. Sharp, stern.....	300	July 25, 1863	15, 000	.....do.....	Quiver river; burned by the confederates.
H. D. Mears, stern.....	400	.....do.....	40, 000	.....do.....	Sunflower river; burned by the confederates to prevent capture.
Tom. Scott, stern.....	300	July —, 1863	3, 000	Louisville, Ky.....	Warsaw, Ind.; striking snag.
Alice Dean, side.....	800	.....do.....	80, 000	Cincinnati, Ohio.....	Brandenburg, Ky.; burned by John Morgan at the time of his raid into Ohio, after being used to ferry his forces across the river.
Ruth, side.....	1200	Aug. 4, 1863	85, 000	St. Louis, Mo.....	Near Columbus, Ky.; burned; believed to have been burned by the emissaries of the confederate government; \$2,500,000 in the hands of paymasters, for the payment of General Grant's army before Vicksburg, was destroyed.
City of Madison, side.....	1100	Aug. —, 1863	50, 000	Madison, Ind.....	Vicksburg, Miss.; explosion of shell. This boat was destroyed while being loaded with ordnance stores, by the explosion of a shell accidentally dropped by a deck hand; sixty persons killed.
Tom. Suggs, side.....	350	.....do.....	6, 000	Des Arc, Ark.....	White river; burned by rebels to prevent capture.
Courier, stern.....	350	.....do.....	25, 000	Memphis, Tenn.....	Near Napoleon, Ark.; sunk by collision with steamer Des Arc; sixty lives lost; afterwards burned by rebels.
Champion, side.....	1200	Aug. 21, 1863	70, 000	St. Louis, Mo.....	Memphis levee; burned by Wm. Murphy, one of the boat-burners employed by the confederate secretary of war, for which he received \$3,000.

*List of boats destroyed, &c.—Continued*

Name of boat.	Tons.	Date of loss.	Alleged value.	Where owned.	Where lost and cause of loss.
Sally Wood, stern .....	300	July —, 1862	\$18,000	St. Louis, Mo .....	Island No. 82, Mississippi river; burned. This boat was attacked by the confederates with cannon, a shot from which cut her steam-pipe, when she was forced to surrender, and was burned.
Callie, stern .....	300	Aug. 9, 1862	35,000	.....do.....	{ Mouth of Duck creek, in Tennessee river; burned. These boats were lying at the bank changing cargoes, when they were surprised and boarded by guerillas, under Roddy, who burned the boats and paroled the crews.
Skylark, side .....	900	.....do.....	50,000	.....do.....	
Acacia, stern .....	200	Aug. 20, 1862	5,000	Memphis, Tenn.....	White river, near mouth of Little Red river; striking snag; 100 lives lost.
Silver Lake, side .....	170	Sept. 3, 1862	6,500	St. Louis, Mo .....	Lime creek, Osage river; burned by confederates.
W. B. Terry, stern.....	200	Sept. 13, 1862	6,000	U. S. government.....	Tennessee river; sunk by confederates. Used as a gun or despatch boat by General Grant; captured by a band of guerillas who were headed by Napier, who ran her on the bar opposite Napier's house, at Duck creek, and, after removing the guns with which she was armed, sunk her.
Hannibal City, side .....	800	Sept. 4, 1862	35,000	St. Louis, Mo .....	Louisiana, Missouri; striking snag.
Eagle, stern.....	70	Sept. 19, 1862	5,000	Warsaw, Mo .....	Near La Rouge, Mississippi river; collided with Arizona.
W. H. Russell, side.....	750	Oct. 27, 1862	15,000	St. Louis, Mo .....	{ St. Louis, Missouri; burned accidentally. These four boats were burned at the levee, at midday, by an accidental fire.
H. D. Bacon, side .....	600	.....do.....	24,000	.....do.....	
Estella, side .....	700	.....do.....	29,000	Pittsburg, Pa.....	{ Near Memphis, Tennessee; burned accidentally.
A. McDowell, side .....	750	.....do.....	29,000	St. Louis, Mo .....	
Swallow, stern .....	350	Oct. —, 1862	6,000	.....do.....	Near Memphis, Tennessee; burned accidentally.
Eugene, side .....	650	Nov. 1, 1862	20,000	.....do.....	Plum Point, Mississippi river; sunk accidentally by striking the old wreck of the Eliza.
Denmark, side.....	600	.....do.....	9,000	.....do.....	Atlas Landing, Mississippi river; striking snag.
Laclede, side .....	400	Nov. 18, 1862	7,000	.....do.....	Near Chester, Illinois; striking snag.
Star, stern.....	95	Nov. 29, 1862	5,000	New Orleans, La .....	Near Plaquemine, Louisiana; captured and burned by a party of guerillas.
Mingo, stern .....	300	Nov. —, 1862	14,000	U. S. government.....	Cape Girardeau, Missouri; burned accidentally.
Lake City, stern .....	400	Dec. 8, 1862	15,000	St. Louis, Mo.....	Carson's Landing, White river; burned by guerillas who surprised her as she was landing, and destroyed both boat and cargo. The passengers and crew were detained as prisoners.

Badger State, stern.....	300	Dec. 14, 1862	8,000	St. Louis, Mo.....	Upper Mississippi river; striking snag.
Rose Douglas, stern.....	220	Dec. 27, 1862	25,000	Pittsburg, Pa.....	Van Buren, Ark.; captured and burned by U. S. forces.
Van Buren, side.....	175	.....do.....	6,500	Little Rock, Ark.....	
Violet, stern.....	250	.....do.....	10,000	Fort Smith, Ark.....	Fort Smith, Ark.; burned by confederates to prevent capture. Near Napoleon, Ark.; burned. This boat was loaded with ordnance stores and a large mail for General Sherman's army; was captured by the treachery of her master, and afterwards burned at Pocahontas, in White river, on the approach of the expedition under General Gorman, to prevent recapture. Steubenville, Ohio; striking snag.
Fred. Natrebe, stern.....	300	.....do.....	30,000	Memphis, Tenn.....	
Key West, stern.....	400	.....do.....	20,000	Little Rock, Ark.....	
Arkansas, stern.....	300	.....do.....	18,000	Des Arc, Ark.....	
Blue Wing, side.....	170	Dec. 28, 1862	8,000	St. Louis, Mo.....	
.....	.....	.....	.....	.....	
Reliance, stern.....	300	Dec.—, 1862	4,000	Millersport, Ohio.....	White river; sunk by confederates. These six boats were sunk to prevent their falling into the hands of the United States forces, and also to obstruct the channel.
Eliza G., side.....	750	.....do.....	15,000	Memphis, Tenn.....	
Palmetto, propeller.....	250	.....do.....	6,000	Confederate government.....	Near Fort Smith, Ark.; burned by confed'tes to prevent capture. Opposite Memphis; striking snag.
Lady Walton, stern.....	300	.....do.....	15,000	Memphis, Tenn.....	
Dr. Buffington, side.....	500	.....do.....	26,000	New Orleans, La.....	Near Hastings, Minn.; sunk by ice. Betsey's Landing, Cumberland river; captured and burned by guerillas while wooding, after killing the mate and wounding several of the crew.
Mary Patterson, stern.....	130	.....do.....	5,000	Jacksonport, Ark.....	
Mariposa, stern.....	200	.....do.....	8,000	Memphis, Tenn.....	Near Memphis, Tenn.; burned by guerillas. This boat went to the bank opposite Memphis to repair machinery, where she was boarded by guerillas, who run her to a point above the city and burned her.
Era, (7,) stern.....	100	.....do.....	15,000	Pittsburg, Pa.....	
Neptune, stern.....	250	1862.....	9,000	Pittsburg, Pa.....	Vicksburg, Miss.; sunk. This boat during a heavy gale of wind broke from her fastenings, drifted into the hands of the United States forces below the city, and soon after sunk, March 29.
Fanny Harris, stern.....	167	1862.....	7,000	Galena, Ill.....	
Mary Crane, stern.....	240	Jan. 8, 1863	10,000	St. Louis, Mo.....	Near Cairo, Ill.; burned by guerillas. Tallahatchie river; burned. Run ashore and burned by confederates to prevent her capture by the United States Yazoo Pass expedition; had on board 300 bales of cotton.
.....	.....	.....	.....	.....	
Jacob Hassleman, stern.....	250	.....do.....	8,500	St. Louis, Mo.....	Mouth of Tallahatchie river; sunk by confederates. This is the steamship that was sent to the relief of Fort Sumter; was captured by the confederate General Earl Van Dorn on the Gulf coast in 1861, and used for the transportation of troops, and was sunk to obstruct the channel.
.....	.....	.....	.....	.....	
Vicksburg, side.....	1000	Feb. 8, 1863	58,000	Confederate government.....	
Hercules, side.....	250	Feb. 18, 1863	6,500	Pittsburg, Pa.....	
35th Parallel, side.....	800	Mar. 13, 1863	40,000	Van Buren, Ark.....	
Star of the West, side.....	1300	.....do.....	150,000	New York.....	
(Ocean steamship.)					

List of boats destroyed, &c.—Continued.

Name of boat.	Tons.	Date of loss.	Alleged value.	Where owned.	Where lost and cause of loss.
Saxonia, propeller.....	75	April 8, 1863	\$6,000	Cincinnati, Ohio.....	Cumberland river; burned by guerillas. } Both of these boats Cumberland river; burned by guerillas. } were captured and destroyed by a band of guerillas, 1,200 strong, with two pieces of artillery, under Woodward, who, after the surrender of the boats, took out eight negroes and shot them by the light of a lantern. Captain Lane, of the Lovell, expressing strong disapprobation of the act, was taken and shot in the same cold- blooded manner.
R. M. C. Lovell, stern.....	100	.....do.....	4,500	.....do.....	
Prioreess, side.....	600	April 16, 1863	80,000	Madison, Ind.....	Near Cincinnati, Ohio; burned accidentally.
Henry Clay, side .....	400	April 22, 1863	60,000	Cincinnati, Ohio.....	Vicksburg, Miss.; burned. } These boats were destroyed by Vicksburg, Miss.; sunk. } the confederate batteries while passing Vicksburg under the orders of General Grant. The Tigress received fourteen shots, making a hole in her hull four feet in length, which reduced her to a sinking condition; she was consequently run ashore two miles below Vicksburg and abandoned.
Tigress, side .....	500	.....do.....	36,000	Cairo, Ill.....	
Natchez, side.....	1200	April —, 1863	100,000	Confederate government.	Yazoo river; burned by accident. Was intended for service as a confederate gunboat, (cotton-clad;) while en route for Fort Pemberton, sixty-five miles below Yazoo City. accidentally caught fire and was destroyed.
Minnesota, stern.....	250	May 3, 1863	15,000	St. Louis, Mo., and Chi- cago, Ill.	Near Greenville, Miss.; burned by confederates.
Majestic, side .....	1300	May 6, 1863	20,000	Pittsburg, Pa.....	Near Hickman, Ky.; burned accidentally.
Mobile, side, confed. iron-clad..	400	May 20, 1863	110,000	Confederate government.	Yazoo city; sunk by confederates to obstruct channel.
Scotland, side .....	1000	May 22, 1863	25,000	Vicksburg, Miss .....	Fifteen miles below Fort Pemberton; scuttled and sunk. These four boats were seized by the confederates at the commence- ment of hostilities, and sunk 15 miles below Fort Pemberton to obstruct the channel; the upper works were burned off by Lieut. Walker, United States navy, May 25, 1863.
Golden Age, side .....	1000	.....do.....	30,000	New Orleans, La .....	
John Wulsh, side .....	1200	.....do.....	70,000	St. Louis, Mo .....	
R. J. Lackland, side.....	1500	.....do.....	50,000	.....do.....	
Hope, stern .....	300	May 25, 1863	3,000	Yazoo City.....	Yazoo river; captured and burned by Lieut. Walker, United States navy, 140 miles above mouth of Sunflower river.
Emma Betts, stern.....	150	.....do.....	9,000	.....do.....	{ Quiver river; scuttled and burned. These two boats were sunk by the rebels to prevent capture, and afterward burned by Lieut. Walker, United States navy.
Dew Drop, stern .....	300	.....do.....	17,000	.....do.....	

Argo, side.....	600	.....do.....	\$3,000	Cincinnati, Ohio.....	Seventy-five miles up Sunflower river; burned by Lieut. John G. Walker, United States navy, same as lost.
Horizon, stern.....	600	May —, 1863	20,000	Pittsburg, Pa.....	Grand Gulf, Miss.; sunk by collision with steamer Moderator; one section of Chicago Board of Trade battery was lost.
Lebanon No. 2, stern.....	550	June 24, 1863	23,000	Cincinnati, Ohio.....	Hurricane island; striking snag.
Ben. McCulloch, stern.....	150	July 14, 1863	13,000	.....do.....	Tchula lake; scuttled and burned by confed'tes to prevent capture.
Peytona, side.....	1000	.....do.....	35,000	Louisville, Ky.....	Yazoo river; sunk accidentally at Eureka plantation, 25 miles above Vicksburg.
Magnolia, side.....	1800	.....do.....	22,000	New Orleans, La.....	Near Yazoo City; sunk. These six boats were run up the Yazoo river by the confederates to prevent capture, and destroyed under orders of General Joseph E. Johnston on hearing of the surrender of Vicksburg.
B. P. Cheeney, side.....	600	.....do.....	24,000	.....do.....	
Capital, (towboat,) side.....	160	.....do.....	9,000	.....do.....	
Magenta, side.....	1200	.....do.....	75,000	.....do.....	
J. F. Pasgoud, side.....	700	.....do.....	75,000	.....do.....	
Prince of Wales, side.....	1000	.....do.....	40,000	Memphis, Tenn.....	French Point, Yazoo river; sunk by the confederates. Do.
Mary E. Keene, side.....	1000	July 15, 1863	90,000	New Orleans, La.....	
Arcadia, side.....	600	July 17, 1863	22,000	.....do.....	
Edward J. Gay, side.....	1200	.....do.....	60,000	St. Louis, Mo.....	
Ferd. Kennett, side.....	1200	.....do.....	60,000	.....do.....	
Cotton Plant, side.....	300	July 22, 1863	15,000	Memphis, Tenn.....	Yallabusha river. These three boats were sunk to prevent capture.
					Near Yazoo City; sunk by the confederates to obstruct channel.
J. M. Sharp, stern.....	300	July 25, 1863	15,000	.....do.....	Vicksburg, Miss.; sunk on the Tallahatchie river by the confederates to prevent capture; was afterward raised by United States government, and soon after again sunk in a storm at Vicksburg.
H. D. Mears, stern.....	400	.....do.....	40,000	.....do.....	Quiver river; burned by the confederates.
Tom. Scott, stern.....	300	July —, 1863	3,000	Louisville, Ky.....	Sunflower river; burned by the confederates to prevent capture.
Alice Dean, side.....	800	.....do.....	80,000	Cincinnati, Ohio.....	Warsaw, Ind.; striking snag.
Ruth, side.....	1200	Aug. 4, 1863	85,000	St. Louis, Mo.....	Brandenburg, Ky.; burned by John Morgan at the time of his raid into Ohio, after being used to ferry his forces across the river.
					Near Columbus, Ky.; burned; believed to have been burned by the emissaries of the confederate government; \$2,500,000 in the hands of paymasters, for the payment of General Grant's army before Vicksburg, was destroyed.
City of Madison, side.....	1100	Aug. —, 1863	50,000	Madison, Ind.....	Vicksburg, Miss.; explosion of shell. This boat was destroyed while being loaded with ordnance stores, by the explosion of a shell accidentally dropped by a deck hand; sixty persons killed.
Tom. Suggs, side.....	350	.....do.....	6,000	Des Arc, Ark.....	White river; burned by rebels to prevent capture.
Courier, stern.....	350	.....do.....	25,000	Memphis, Tenn.....	Near Napoleon, Ark.; sunk by collision with steamer Des Arc; sixty lives lost; afterwards burned by rebels.
Champion, side.....	1200	Aug. 21, 1863	70,000	St. Louis, Mo.....	Memphis levee; burned by Wm. Murphy, one of the boat-burners employed by the confederate secretary of war, for which he received \$3,000.

List of boats destroyed, &c.—Continued.

Name of boat.	Tons.	Date of loss.	Alleged value.	Where owned.	Where lost and cause of loss.
Wm. L. Ewing, side.....	600	Sept. 3, 1863	\$40, 000	St. Louis, Mo.....	Selma, Mississippi river; striking snag.
Arkansas, stern.....	400	Sept. 10, 1863	45, 000	Little Rock, Ark.....	
Julia Roane, stern.....	400	.....do.....	30, 000	.....do.....	Little Rock, Ark.; burned by the rebels. These eleven boats were burned on the evacuation of Little Rock to prevent capture.
St. Francis No. 3, side.....	300	.....do.....	40, 000	Memphis, Tenn.....	
Chester Ashley, stern.....	350	.....do.....	40, 000	Little Rock, Ark.....	
Little Rock, stern.....	200	.....do.....	30, 000	.....do.....	
Tablequah, side.....	300	.....do.....	14, 000	.....do.....	
Pine Bluff, side.....	300	.....do.....	27, 000	.....do.....	
Bracelet, side.....	400	.....do.....	30, 000	Memphis, Tenn.....	
Pontchartrain, (formerly Lizzie Simmonds,) side.....	500	.....do.....	20, 000	Confederate government.	
Granite State, stern.....	200	.....do.....	15, 000	Arkansas.....	
Milton Brown, side.....	300	.....do.....	20, 000	.....do.....	
Dinonal, side.....	300	Sept. 12, 1863	15, 000	St. Louis, Mo.....	Donaldson's Landing, Arkansas river. Near St. Charles, White river; striking snag.
Imperial, side.....	1500	Sept. 14, 1863	90, 000	.....do.....	
Hiawatha, side.....	1400	.....do.....	50, 000	.....do.....	St. Louis levee; burned. These four boats were burned by Frazer and his accomplices, acting under instructions from the rebel government.
Post Boy, side.....	600	.....do.....	20, 000	.....do.....	
Jesse K. Bell, stern.....	650	.....do.....	10, 000	Cincinnati, Ohio.....	
Robert Campbell, jr., side.....	900	Sept. 28, 1863	45, 000	St. Louis, Mo.....	
Sam Gaty, side.....	500	Sept. —, 1863	25, 000	.....do.....	Milliken's Bend, Mississippi river; burned at 7 o'clock p. m., by an emissary of the rebel government while passing down the river, who had taken passage disguised as a negro.
Magenta, side.....	650	1863.....	40, 000	.....do.....	
Harmonia, stern.....	220	1863.....	4, 000	Louisville, Ky.....	Island No. 92, Mississippi river; striking snag.
Boston, side.....	650	1863.....	20, 000	Ashland, Ky.....	
Catahoula, side.....	500	Oct. 4, 1863	20, 000	Memphis, Tenn.....	New Orleans, Louisiana; burned accidentally.
Chancellor, side.....	800	.....do.....	34, 000	St. Louis, Mo.....	
Forest Queen, side.....	800	.....do.....	55, 000	Madison, Ind.....	Ohio river; burned accidentally.
Lady Jackson, stern.....	400	Oct. 14, 1863	16, 000	Cincinnati, Ohio.....	
Mist, stern.....	300	Oct. 21, 1863	40, 000	St. Louis, Mo.....	St. Louis levee; burned. These three boats were burned by Frazer and his accomplices in the employ of the confederate government.
Sunny Side, side.....	600	Nov. 13, 1863	30, 000	Pittsburg, Pa.....	
Tecumseh, side.....	800	Dec. 1, 1863	16, 000	U. S. government.....	White river; striking snag.
Odd-Fellow, side.....	100	Jan. 1, 1864	12, 000	Cincinnati, Ohio.....	
					Mississippi river; burned accidentally.
					Pomeroy, Ohio river; burned accidentally.
					Ellis's cliffs, Mississippi river; burned accidentally.
					Columbus, Kentucky; sunk by ice.



Science, stern.....	300	Jan. 7, 1864	15,000	.....do.....	Louisville, Kentucky; burned accidentally.
Diligent, side.....	270	Jan. 10, 1864	18,000	St. Louis, Mo.....	Ship Island, Mississippi river; striking snag.
Victor, stern.....	100	Jan. 27, 1864	35,000	Cincinnati, Ohio.....	Evansville, Indiana; sunk by ice.
Luzerne, side.....	250	Jan. 28, 1864	7,000	St. Louis, Mo.....	Crawford's bar, Mississippi river; sunk by ice.
Moderator, stern.....	500	Jan. —, 1864	13,000	Steubenville, Ohio.....	St. Louis, Missouri; sunk by ice.
Belle Creole, stern.....	375	Feb. 1, 1864	20,000	Pittsburg, Pa.....	Below Plum Point, Mississippi river; striking snag.
Mill Bay, side.....	175	.....do.....	15,000	Memphis, Tenn.....	Jacksonville, White river; striking snag.
Planet, side.....	1200	.....do.....	25,000	St. Louis, Mo.....	College Point, Mississippi; striking the bank in a fog.
Robert Lee, (tugboat,) stern.....	.....	Feb. 5, 1864	20,000	Pittsburg, Pa.....	{ Louisville, Kentucky; burned. These two boats were burned
D. G. Taylor, side.....	1100	.....do.....	30,000	St. Louis, Mo.....	{ by incendiaries in the employ of the confederate government.
A. J. Sweeney, stern.....	425	Mar. 9, 1864	32,000	.....do.....	Clarksville bridge; sunk and burned, with full load of govern-
					ment stores, by striking a pier of the bridge.
Fannie Bullitt, side.....	800	Mar. 14, 1864	50,000	.....do.....	Egg Point, Mississippi river; striking snag.
Spread Eagle, side.....	750	Mar. 20, 1864	45,000	.....do.....	Miller's Landing, Missouri river; striking snag.
Dacotah, stern.....	350	Mar. 25, 1864	12,000	Pittsburg, Pa.....	Paducah, Ky.; burned on the ways at the time of an attack
					on Paducah by the confederate General Forrest.
Leon, stern.....	150	Mar. —, 1864	12,000	Yazoo River.....	Barnum's, Arkansas river; sunk accidentally.
Florence, side.....	600	Mar. 29, 1864	50,000	St. Louis, Mo.....	Atchison, Kansas; striking snag.
Key West, (4,) stern.....	250	April 1, 1864	12,000	Pittsburg, Pa.....	Little Rock, Arkansas; burned accidentally.
La Crosse, stern.....	350	April 12, 1864	14,000	Cincinnati, Ohio.....	Red river; captured and burned by the 1st Louisiana cavalry,
					while taking on cotton at a plantation.
Hastings, stern.....	375	April 23, 1864	20,000	St. Louis, Mo.....	Red river; striking snag while near Alexandria, retreating
					with General Banks's Red River expedition.
Champion, (3,) side.....	150	April 26, 1864	15,000	Covington, Ky.....	{ Red river; burned by Admiral Porter. These two boats were
Champion, (5,) side.....	250	.....do.....	22,000	.....do.....	{ in the employ of the navy, and were destroyed by order
					of Admiral Porter after the gunboat Eastport had been
					blown up, it being impossible to save them, as they were in
					imminent danger from confederate batteries while retreating
					with the Red River expedition.
Chippewa Valley, stern.....	150	April 30, 1864	10,000	St. Louis, Mo.....	Cumberland river; striking snag.
Emma, side.....	750	May 1, 1864	55,000	.....do.....	Red river; captured and burned while returning from General
					Banks's Red River expedition to New Orleans by about 3,000
					Texas troops under General Majors, who pursued the boat
					down the river three miles, when, becoming disabled and un-
					manageable, she ran into the bank, and was immediately
					boarded by the confederates, who burned her.
City Belle, stern.....	350	May 15, 1864	8,000	Madison, Ind.....	{ Red river; captured and burned by confederate batteries as
John Warner, side.....	750	.....do.....	26,000	St. Louis, Mo.....	{ the boats were returning to New Orleans from the Red River
Lebanon, stern.....	400	May 27, 1864	15,000	Cincinnati, Ohio.....	{ expedition; two gunboats were lost at the same time.
					Greenville, Mississippi; captured and burned by guerillas while
					in pursuit of cotton.



Emma Boyd, stern.....	275	Aug. 20, 1864	10,000	Wheeling, Va.....	Selma, Mississippi river; striking snag.
Courier, stern.....	350	Aug. 22, 1864	25,000	Evansville, Ind.....	Cairo, Illinois; burned accidentally.
John Swasey, stern.....	350	Aug. 29, 1864	25,000	Cincinnati, Ohio.....	Devil's island, Mississippi river; striking snag.
John J. Roe, side.....	1500	Aug. —, 1864	50,000	St. Louis, Mo.....	Near New Madrid, Missouri; striking snag.
J. T. Miller, stern.....	130	.....do.....	10,000	Hazleton.....	Near Pine Bluff, Arkansas; burned by guerillas.
Emma, stern.....	400	Sept. 2, 1864	8,000	St. Louis, Mo.....	Wayne City, Missouri river; striking snag.
Lasalle, stern.....	375	Sept. 25, 1864	12,000	.....do.....	Devil's island, Mississippi river; striking snag.
Gertrude, stern.....	175	Sept. —, 1864	2,000	New Orleans, La.....	College Point, Mississippi river; striking snag; six lives lost.
H. S. Dickenson, side.....	60	Oct. 6, 1864	4,000	Newburg, Ohio.....	St. Louis, Missouri; exploded boilers; five lives lost.
J. C. Irvin, stern.....	200	Oct. 4, 1864	12,000	U. S. government.....	Johnsonville, Tennessee; exploded boilers; seventeen lives lost.
Dime, side.....	150	Oct. 21, 1864	40,000	Madison, Ind.....	On falls at Louisville; striking a rock.
J. H. Fisher, stern.....	300	Oct. 27, 1864	10,000	Evansville, Ind.....	Carroll island, Mississippi river; striking snag.
Mazeppa and barge, side.....	450	Oct. 29, 1864	40,000	Cincinnati, Ohio.....	Tennessee river; captured and burned by rebels, with cargo of government stores worth \$200,000.
Davo Hughes, stern.....	250	.....do.....	8,000	Nashville, Tenn.....	Cumberland river; burned by guerillas.
Anna, stern.....	110	Oct. 30, 1864	7,000	Louisville, Ky.....	Johnsonville, Tennessee; burned by guerillas.
Empress, side.....	1800	.....do.....	150,000	St. Louis, Mo.....	Island No. 34, Mississippi river; striking snag.
Universe, side.....	900	Oct. 31, 1864	20,000	Cincinnati, Ohio.....	Island No. 37, Mississippi river; striking snag.
Dunlieth, side.....	300	.....do.....	10,000	.....do.....	Island No. 65, Mississippi river; striking snag.
J. W. Cheeseman, side.....	500	.....do.....	25,000	.....do.....	Fort Hindman, Tennessee; sunk by accident.
West Wind, side.....	650	Oct. 17, 1864	50,000	St. Joseph, Mo.....	Glasgow, Missouri; burned by confederates under Joe Shelby.
Robert Emmet, stern.....	250	Nov. 3, 1864	20,000	Cincinnati, Ohio.....	Witt's Landing, Missouri river; striking snag.
J. H. Doane and 2 barges, stern.....	350	Nov. 4, 1864	32,000	.....do.....	} Johnsonville, Tennessee: burned. These seven boats were destroyed by order of the commander of the post of Johnsonville, when attacked by the rebel General Forrest, to prevent their falling into his hands.
Arcola and barge, stern.....	200	.....do.....	40,000	Pittsburg, Pa.....	
Mountaineer, stern.....	500	.....do.....	60,000	St. Louis, Mo.....	
Aurora, stern.....	700	.....do.....	35,000	Cincinnati, Ohio.....	
Goody Friends, stern.....	400	.....do.....	20,000	.....do.....	
J. B. Ford, stern.....	400	.....do.....	13,000	U. S. government.....	} Fort Hindman Tennessee; captured and destroyed by confederates under General Forrest.
Duke, stern.....	200	.....do.....	9,000	.....do.....	
Venus, stern.....	400	.....do.....	28,000	St. Louis, Mo.....	
James White, side.....	1200	Nov. 5, 1864	120,000	.....do.....	Island No. 10, Mississippi river; striking snag; eighteen lives lost.
R. H. Barnum, stern.....	60	.....do.....	7,500	U. S. government.....	Big Sandy river, Kentucky; burned by guerillas.
Fawn, stern.....	50	.....do.....	5,000	Ohio river.....	Big Sandy river, Kentucky; burned by guerillas, under Col. Witcher, while aground at Buffalo shoals.
Captain John Brickle, stern.....	400	Nov. 13, 1864	30,000	Pittsburg, Pa.....	Pomeroy, Ohio river; striking snag.
Ella, stern.....	100	Nov. 19, 1864	12,000	Leavenworth, Kansas.....	Weems's Landing, Missouri river; striking snag.
Lancaster, (4,) side.....	500	Nov. —, 1864	35,000	Cincinnati, Ohio.....	{ Herrman, Missouri; sunk by accident. This was one of a fleet of thirty boats transporting General Smith's army from St. Louis to Jefferson City, at the time of Price's invasion of Missouri.

List of boats destroyed, &c.—Continued.

Name of boat.	Tons.	Date of loss.	Alleged value.	Where owned.	Where lost and cause of loss.
A. S. Brooks, propeller.....	50	Nov. —, 1864	\$10,000	Memphis, Tenn.....	Mississippi river; striking snag.
S. Louis, stern.....	350	.....do.....	7,500	Pittsburg, Pa.....	Cumberland river; sunk accidentally.
Thomas E. Tutt, side.....	600	Dec. 9, 1864	26,000	U. S. government.....	Above Fort Donelson, Tennessee; captured and burned by forces under the rebel General Lyon, after three cannon shots had struck her boilers.
Ben South, ferry-boat.....	150	.....do.....	6,000	New Albany.....	{ Cumberland river; captured and burned by the rebel General
Echo, stern.....	175	.....do.....	6,000	Pittsburg, Pa.....	{ Lyon, and burned after ferrying his troops across the river.
Maria, stern.....	375	Dec. 11, 1864	35,000	Cincinnati, Ohio.....	Carondelet, Missouri; exploded boilers and burned; six lives lost.
Morning Star, side.....	80	Dec. 16, 1864	12,000	St. Louis, Mo.....	Above Memphis, Tennessee; burned by guerillas; broke her machinery and drifted to an island, where she was boarded by guerillas and burned.
Progress, side.....	350	Dec. —, 1864	5,000	St. Louis, Mo.....	Dead-man's Bend, Mississippi river; burned accidentally.
T. C. Jessup, side.....	300	.....do.....	4,000	Davenport, Iowa.....	Island No. 8, Mississippi river; burned accidentally.
Venango, stern.....	325	.....do.....	15,000	Vicksburg, Miss.....	Pilcher's Point Landing, Mississippi river; captured and burned below Lake Providence, while on a cotton expedition, by a band of guerillas known as Evans's scouts.
Sunny South, ferry.....	.....	1864.....	8,000	Little Rock, Ark.....	Arkansas river; sunk accidentally.
Echo, (2,) stern.....	250	Jan. 17, 1865	10,000	Pittsburg, Pa.....	Cairo, Illinois; unknown.
Dr. Kane, stern.....	400	.....do.....	15,000	.....do.....	Cairo, Illinois, striking a log.
Eclipse, stern.....	400	Jan. 31, 1865	25,000	Aurora, Ind.....	Johnsonville, Tennessee; exploded boilers; seventy-six lives lost.
Arago, side.....	500	Jan. —, 1865	35,000	St. Louis, Mo.....	Mississippi river; burned accidentally.
Chippewa, stern.....	250	.....do.....	20,000	U. S. government.....	Arkansas river; captured and burned by rebels.
Dime, tug-boat.....	.....	.....do.....	3,000	.....do.....	Natchez, Mississippi; exploded boilers.
J. R. Williams, ferry-boat.....	300	June, 1865	9,000	Keokuk, Iowa.....	Between Forts Gibson and Smith, Arkansas; captured and burned by a large force of Stand Watie's Indians; a number of the crew were shot, and the remainder taken to Indian territory and held as prisoners.
Shenango, stern.....	450	Jan. 1865	15,000	Cincinnati, Ohio.....	Cumberland river; burned by accident.
Progress, propeller.....	65	.....do.....	3,500	Memphis, Tenn.....	Arkansas river; burned by accident.
Saline, stern.....	350	.....do.....	3,500	.....do.....	Clark's bar; unknown.
Little Forest Queen, side.....	200	.....do.....	25,000	St. Louis, Mo.....	President's island, Mississippi river; striking snag.

La Moine City, stern.....	300	.....do.....	15,000	.....do.....	Arkansas river; striking snag.
Grampus, stern.....	250	.....do.....	6,500	Memphis, Tenn.....	Little Chicken island; captured and burned by guerillas.
Nettie Harterpie, stern.....	150	Mar. 2, 1865	9,000	Pittsburg, Pa.....	Pomeroy, Ohio river; burned accidentally.
James S. Watson, stern.....	300	.....do.....	22,000	Memphis, Tenn.....	Napoleon, Arkansas; striking snag.
Stephen Bayard, side.....	280	Mar. 6, 1865	12,000	St. Louis, Mo.....	Memphis levee; burned by a supposed rebel incendiary.
Imperial, stern.....	450	Mar. 8, 1865	35,000	.....do.....	Clarksville bridge; sunk by striking bridge.
Louisa, side.....	200	Mar. 11, 1865	20,000	.....do.....	South Point, Missouri river; striking snag.
Mark R. Cheek, side.....	300	Mar. 21, 1865	15,000	Memphis, Tenn.....	Washita river; burned by guerillas.
Charlie Miller, stern.....	200	Mar. 23, 1865	8,000	Cincinnati, Ohio.....	Cumberland river; sunk in a storm.
Bertrand, side.....	500	April 1, 1865	40,000	St. Louis, Mo.....	Omaha, Missouri river; striking snag.
Lady Jane, side.....	300	April 11, 1865	15,000	Galena, Ill.....	Rock island, Illinois; sunk by striking bridge.
Clara Poe, stern.....	400	April 15, 1865	18,000	Pittsburg, Pa.....	Cumberland river; burned accidentally; cargo of government freight lost.
Sultana, side.....	1300	April 27, 1865	90,000	St. Louis, Mo.....	Near Memphis, Tennessee; exploded boilers and burned, in the night, near islands known as "Hen-and-Chickens;" over 1,400 lives were lost, mostly soldiers returning home.
St. Paul, side.....	450	April —, 1865	11,000	Memphis, Tenn.....	Hatchie river; burned by guerillas.
Elwood, side.....	250	.....do.....	10,000	.....do.....	Hatchie river; burned by guerillas.
Resolute, stern.....	250	.....do.....	5,000	St. Louis, Mo.....	Mouth of Red river; striking snag.
Adriatic, stern.....	800	.....do.....	34,000	U. S. government.....	Hurricane island, Mississippi river; striking snag.
Celeste, stern.....	300	.....do.....	8,000	Little Rock, Ark.....	Duval's Bluff, Arkansas; striking snag.
Cora, side.....	400	May —, 1865	35,000	St. Louis, Mo.....	Above Omaha city; striking snag.
St. Johns, propeller.....	200	.....do.....	17,000	New Orleans, La.....	Lake Pontchartrain, Louisiana; burned accidentally.
Minnehaha, side.....	1000	May 15, 1865	25,000	St. Louis, Mo.....	New Orleans, Louisiana; burned accidentally.
J. T. McCombs, stern.....	275	May 19, 1865	18,000	.....do.....	St. Charles, Missouri river; striking snag.
Burd Levi, stern.....	350	.....do.....	18,000	New Albany, Ind.....	West Franklin, Indiana; exploded boilers and sunk.
Poland, stern.....	350	June 2, 1865	15,000	Cincinnati, Ohio.....	Yazoo river; collided with Idaho.
Kentucky, side.....	600	June —, 1865	28,000	U. S. Government.....	Red river; striking snag; loaded with paroled rebels; thirty lives lost.

*Summary of boats lost or destroyed on the Mississippi river and its tributaries during the war, as stated in the annexed report.*

### DESTROYED BY CASUALTIES OF WAR.

Year.	Captured and burned by U. S. forces.			Captured and burned by rebel forces.			Burned by U. S. forces to prevent capture.			Burned by rebel forces to prevent capture.			Sunk by rebels to obstruct channel.			Captured and burned by guerillas.		
	No. of boats.	Tonnage.	Value as al- leged.	No. of boats.	Tonnage.	Value as al- leged.	No. of boats.	Tonnage.	Value as al- leged.	No. of boats.	Tonnage.	Value as al- leged.	No. of boats.	Tonnage.	Value as al- leged.	No. of boats.	Tonnage.	Value as al- leged.
1861.....	20	7689	\$634,000	1	280	\$10,000				14	5800	\$397,000	15	7455	\$306,500	6	2195	\$129,000
1862.....	4	1350	52,000	1	170	6,500	140		\$9,000	25	13910	842,000	7	7600	495,000	5	915	35,500
1863.....				4	1950	191,000							1	1500	45,000	13	2705	148,000
1864.....				11	4975	232,000	3150		246,000							4	1250	42,500
1865.....				2	550	29,000												
Total.....	24	9039	636,000	19	7925	518,500	10	3230	255,000	39	19710	1,239,000	23	10555	846,500	28	7065	355,000



Year.	Burned by rebel incendiaries.			By striking snag.			By sundry accidents.			By collision.			By explosion of boilers.			Burned accidentally.		
	No. of boats.	Tonnage.	Value as alleged.	No. of boats.	Tonnage.	Value as alleged.	No. of boats.	Tonnage.	Value as alleged.	No. of boats.	Tonnage.	Value as alleged.	No. of boats.	Tonnage.	Value as alleged.	No. of boats.	Tonnage.	Value as alleged.
1861.....	1	500	\$15,000	10	3670	\$138,000	4	1750	\$69,000	.....	.....	.....	18	8749	\$373,000	.....	.....	.....
1862.....	2	1100	32,000	11	4135	133,000	3	967	39,000	2	545	\$9,000	2	730	\$16,500	6	3450	117,000
1863.....	10	9550	479,000	7	3300	162,000	4	3400	158,000	2	950	45,000	.....	.....	.....	8	5670	310,000
1864.....	15	7150	353,000	26	14070	857,000	11	3800	219,500	2	900	44,000	3	635	51,000	7	2425	113,000
1865.....	1	280	12,000	11	4025	250,000	6	1950	86,500	1	350	15,000	4	2050	136,000	7	2765	122,500
Total.....	29	18580	891,000	65	29200	1,540,000	28	11867	572,000	7	2745	113,000	9	3415	203,500	46	23059	1,035,500

RECAPITULATION.

1861.....	34 boats	14,949 tons	Value as alleged, \$605,000
1862.....	83 boats	34,376 tons	Value as alleged, 1,828,500
1863.....	76 boats	48,595 tons	Value as alleged, 2,769,500
1864.....	98 boats	41,310 tons	Value as alleged, 2,358,500
1865.....	36 boats	13,220 tons	Value as alleged, 693,500
Total.....	327 boats	152,450 tons	Value as alleged, 8,255,000

Respectfully submitted to the Quartermaster General:

ALEXANDER BLISS,  
Colonel Q. M. Dept., Bvt. Col. U. S. A., in charge Fourth Division.

No. 12.—Statement of vessels chartered or employed by the Quartermaster's Department on the Mississippi river and its tributaries during the fiscal year ending June 30, 1866.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
John Kilgore.....	Stamer.	1865. July 1	St. Louis, Mo.	Capt. L. S. Metcalf.	.....	Job	1865. ....	St. Louis, Mo.	Capt. L. S. Metcalf.	\$1, 147 71
Jennie Lewis.....	do	do	do	do	.....	do	do	do	do	739 98
Tycoon.....	do	do	do	do	.....	do	do	do	do	605 89
Maria Denning.....	do	do	do	do	.....	do	do	do	do	6, 293 15
Magenta.....	do	do	do	do	.....	do	do	do	do	6, 124 34
Rebecca.....	do	do	do	do	.....	do	do	do	do	942 84
Gray Eagle.....	do	do	do	do	\$170 00	Day	July 3	do	do	425 00
Calypso.....	do	do	do	do	260 00	do	July 1	do	do	195 00
Shamrock.....	do	do	do	do	220 00	do	July 7	do	do	1, 375 00
Enterprise.....	do	do	do	do	263 00	do	July 12	do	do	3, 090 25
Minneola.....	do	do	do	do	220 00	do	do	do	do	2, 585 00
Brilliant.....	do	do	do	do	340 00	do	July 3	do	do	1, 020 00
Armadilla.....	do	do	do	do	206 00	do	July 18	do	do	3, 553 50
Jennie Brown.....	do	do	do	do	185 00	do	July 7	do	do	1, 295 00
Victory.....	do	do	do	do	275 00	do	July 5	do	do	1, 329 16
Argosy.....	do	do	do	do	206 00	do	July 28	do	do	5, 622 00
Belle Peoria.....	do	do	do	do	101 00	do	Sept. 30	do	do	9, 292 00
Big Horn.....	do	do	do	do	250 00	do	July 12	do	do	2, 812 50
Home.....	do	do	do	do	175 00	do	July 28	do	do	4, 900 00
J. D. Perry.....	do	do	do	do	325 00	do	July 11	do	do	3, 575 00
Lilly.....	do	do	do	do	220 00	do	July 27	do	do	5, 940 00
New York.....	do	do	do	do	220 00	do	Sept 26	do	do	5, 720 00
Omaha.....	do	do	do	do	274 00	do	Aug. 5	do	do	9, 864 00
Prairie Rose.....	do	do	do	do	240 00	do	Aug. 3	do	do	8, 160 00
R. T. Lockwood.....	do	do	do	do	375 00	do	July 25	do	do	9, 375 00
Vulcan.....	do	do	do	do	235 00	do	July 31	do	do	7, 285 00
Admiral Farragut.....	do	do	do	do	177 00	do	July 9	do	do	1, 593 00
Silver Lake.....	do	do	do	do	200 00	do	July 25	do	do	5, 000 00
Emperor.....	do	do	do	do	234 00	do	July 15	do	do	3, 610 00

## REPORT OF THE SECRETARY OF WAR.

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## Statement of vessels chartered &amp; employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Fanny Ogden .....	Steamer	1865.	St. Louis, Mo.	Capt. L. S. Metcalf.	.....	Job .....	1865.	St. Louis, Mo.	Capt. L. S. Metcalf.	\$1, 108 60
Henry Von Phul .....	do .....	July 8	do .....	do .....	.....	do .....	.....	do .....	do .....	5, 809 47
Mollie Able .....	do .....	July 10	do .....	do .....	.....	do .....	.....	do .....	do .....	510 25
W. A. Moffett .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	1, 504 24
Wm. McCulloch .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	60 00
Clara Dolson .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	3, 862 85
Alamo .....	do .....	do .....	do .....	do .....	\$180 00	Day .....	July 11	do .....	do .....	180 00
Superior .....	do .....	July 11	do .....	do .....	.....	Job .....	.....	do .....	do .....	581 83
Indiana .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	505 17
Glasgow .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	123 84
Isabella .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	5, 292 07
Annie Laurie .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	15 22
Peoria City .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	1, 902 47
Kate Kinney .....	do .....	July 12	do .....	do .....	.....	do .....	.....	do .....	do .....	4, 294 44
Commercial .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	900 20
Commonwealth .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	5, 057 07
Maria Denning .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	443 50
Pauline Carroll .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	600 00
Muscatine .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	58 94
Clara .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	795 52
Peoria City .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	83 45
Post Boy .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	1, 125 16
Robert Burns .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	69 52
Maria Denning .....	do .....	July 13	do .....	do .....	.....	do .....	.....	do .....	do .....	12, 806 87
Isabella .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	261 10
Bart. Able .....	do .....	do .....	do .....	do .....	86 16½	Day .....	July 28	do .....	do .....	1, 299 93
John Kilgore .....	do .....	July 14	do .....	do .....	.....	Job .....	.....	do .....	do .....	5, 848 57
Bostona .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	1, 307 46
Prairie Rose .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	2, 577 30
Brazil .....	do .....	do .....	do .....	do .....	.....	do .....	.....	do .....	do .....	5, 223 12

# REPORT OF THE SECRETARY OF WAR.

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Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Yorktown.....	Steamer	1865. July 24	St. Louis, Mo	Capt. L. S. Metcalf	.....	Job	1865.	St. Louis, Mo.	Capt. L. S. Metcalf	\$78 25
Kate Putnam.....	do	do	do	do	.....	do	do	do	do	26 11
War Eagle.....	do	do	do	do	.....	do	do	do	do	507 81
Calypso.....	do	do	do	do	.....	do	do	do	do	545 16
Mars.....	do	do	do	do	.....	do	do	do	do	820 97
Glide No. 3.....	do	July 25	do	do	.....	do	do	do	do	133 40
J. P. Webb.....	do	do	do	do	.....	do	do	do	do	136 78
L. M. Kennett.....	do	July 26	do	do	.....	do	do	do	do	169 08
Rowena.....	do	do	do	do	.....	do	do	do	do	1,606 77
Cleona.....	do	July 27	do	do	.....	do	do	do	do	372 59
Henry Von Phul.....	do	do	do	do	.....	do	do	do	do	8,497 83
Paragon.....	do	do	do	do	.....	do	do	do	do	151 74
M. S. Mephram.....	do	do	do	do	.....	do	do	do	do	221 25
Jennie Lewis.....	do	do	do	do	.....	do	do	do	do	4,786 32
Maria.....	do	July 28	do	do	.....	do	do	do	do	35 69
Admiral Farragut.....	do	do	do	do	.....	do	do	do	do	48 00
Tycoon.....	do	do	do	do	.....	do	do	do	do	326 60
Lady Gay.....	do	do	do	do	.....	do	do	do	do	10,028 18
Tacony.....	do	do	do	do	.....	do	do	do	do	206 39
Stephen Decatur.....	do	do	do	do	.....	do	do	do	do	65 00
Isabella.....	do	July 29	do	do	.....	do	do	do	do	1,082 83
Clara Dolson.....	do	do	do	do	.....	do	do	do	do	4,849 60
Lilly.....	do	July 31	do	do	.....	do	do	do	do	3,673 49
Albert Pearce.....	do	do	do	do	.....	do	do	do	do	7,736 17
Lizzie Gill.....	do	do	do	do	.....	do	do	do	do	6,075 20
E. O. Stanard.....	do	Aug. 1	do	do	.....	do	do	do	do	99 21
W. A. Moffett.....	do	do	do	do	.....	do	do	do	do	3,451 63
Cottage No. 2.....	do	do	do	do	.....	do	do	do	do	7 90
Commonwealth.....	do	do	do	do	.....	do	do	do	do	846 00
Glasgow.....	do	do	do	do	.....	do	do	do	do	82 10



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Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earn-ings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Clara.....	Steamer	1865. Aug. 9	St. Louis, Mo	Capt. L. S. Metcalf		Job	1865.	St. Louis, Mo	Capt. L. S. Metcalf	\$4,231 12
Tycoon.....	do	do	do	do			do	do	do	2,254 26
T. L. McGill.....	do	do	do	do			do	do	do	9,373 18
Davenport.....	do	do	do	do			do	do	do	45 87
Rodolph.....	do	do	do	do			do	do	do	471 07
Jennie Lewis.....	do	do	do	do			do	do	do	91 37
Magenta.....	do	do	do	do			do	do	do	2,626 42
Rodolph.....	do	Aug. 10	do	do			do	do	do	100 00
Lizzie Gill.....	do	do	do	do			do	do	do	91 70
Gray Eagle.....	do	do	do	do			do	do	do	964 07
Penola.....	do	do	do	do			do	do	do	391 09
Belie Peoria.....	do	do	do	do	\$272 00	Day	Sept. 30	do	do	13,600 00
David Tatum.....	do	do	do	do	263 00	do	Aug. 31	do	do	5,523 00
G. Lloyd.....	do	Aug. 11	do	do		Job	do	do	do	4 50
Glide No. 3.....	do	do	do	do		do	do	do	do	48 50
Brilliant.....	do	Aug. 12	do	do		do	do	do	do	2,625 48
Mollie Dozier.....	do	do	do	do		do	do	do	do	145 00
Lizzie Gill.....	do	do	do	do		do	do	do	do	145 00
Henry Ames.....	do	do	do	do		do	do	do	do	11,851 31
St. John's.....	do	do	do	do		do	do	do	do	1,942 23
Lorena.....	do	do	do	do		do	do	do	do	1,334 80
Paragon.....	do	do	do	do	200 00	Day	Aug. 13	do	do	150 00
Shamrock.....	do	do	do	do	259 00	do	Aug. 24	do	do	3,205 12
L. M. Kennett.....	do	Aug. 14	do	do			do	do	do	5,419 81
Prairie Rose.....	do	do	do	do			do	do	do	64 37
Beaver.....	do	do	do	do			do	do	do	550 00
Marin Denning.....	do	do	do	do			do	do	do	1,776 17
Live Oak.....	do	do	do	do			do	do	do	32 10
Omniba.....	do	do	do	do	242 00	Day	Aug. 31	do	do	4,114 00
Twilight.....	do	Aug. 15	do	do			do	do	do	2,502 25

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## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Gen's Buell & Lytle	Steamer	1865. Aug 23	St. Louis, Mo	Capt. L. S. Metcalf.		Job	1865.	St. Louis, Mo	Capt. L. S. Metcalf.	\$179 98
Tycoon	do	do	do	do		do	do	do	do	3, 195 03
Cleona	do	do	do	do		do	do	do	do	731 74
Thomas Rogers	do	Aug. 24	do	do		do	do	do	do	4, 005 82
Columbia	do	do	do	do		do	do	do	do	2, 554 47
Highlander	do	do	do	do		do	do	do	do	3 43
Commonwealth	do	do	do	do		do	do	do	do	4, 951 97
Gray Eagle	do	do	do	do		do	do	do	do	1, 627 67
Ida Handy	do	do	do	do		do	do	do	do	1, 101 55
Shreveport	do	do	do	do		do	do	do	do	262 28
Kaskaskia	do	do	do	do		do	do	do	do	83 93
Silver Wave	do	do	do	do		do	do	do	do	3, 035 00
Champion	do	do	do	do		do	do	do	do	31 23
Superior	do	do	do	do		do	do	do	do	1, 160 44
Magenta	do	Aug. 25	do	do		do	do	do	do	3, 294 26
Silver Wave & b'ge.	do	do	do	do		do	do	do	do	5, 177 54
Yellow Stone	do	Aug. 26	do	do		do	do	do	do	5, 891 17
Norman	do	do	do	do		do	do	do	do	119 13
Henry Von Phul	do	do	do	do		do	do	do	do	8, 007 78
Bermuda	do	do	do	do		do	do	do	do	117 50
Isabella	do	do	do	do		do	do	do	do	1, 499 80
May Bruner	do	do	do	do		do	do	do	do	41 28
Lizzie Gill	do	do	do	do		do	do	do	do	3, 784 20
Monsoon	do	do	do	do		do	do	do	do	224 25
St. John and barge.	do	do	do	do		do	do	do	do	1, 892 00
Jennie Lewis	do	do	do	do		do	do	do	do	61 51
Glide No. 3	do	do	do	do		do	do	do	do	374 43
Clara Dolson	do	Aug. 28	do	do		do	do	do	do	6, 149 93
Atlantic	do	do	do	do		do	do	do	do	2, 606 98
Ruth	do	do	do	do		do	do	do	do	972 00

# REPORT OF THE SECRETARY OF WAR.

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## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Platte Valley.....	Steamer.	1865. Sept. 4..	St. Louis, Mo	Capt. L. S. Metcalf..	\$325 00	Day	1865. Sept. 18	St. Louis, Mo	Capt. L. S. Metcalf..	\$4, 631 25
Montana.....	do.....	Sept. 5..	do.....	do.....	.....	Job	.....	do.....	do.....	643 62
Magnolia.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	4, 885 58
E. O. Stunard.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	4, 137 66
New York.....	do.....	do.....	do.....	do.....	210 00	Day	Nov. 3	do.....	do.....	11, 950 78
Liberty No. 2.....	do.....	Sept. 6..	do.....	do.....	.....	Job	.....	do.....	do.....	2, 071 96
Wm. Butler.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	2, 129 50
McPorter.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	2, 220 75
Ada Lyon.....	do.....	Sept. 7..	do.....	do.....	.....	.....	.....	do.....	do.....	188 42
Tiber and barges..	do.....	do.....	do.....	do.....	237 50	Day	Sept. 19	do.....	do.....	2, 850 00
Virginia Barton..	do.....	do.....	do.....	do.....	200 00	do..	Nov. 3	do.....	do.....	5, 200 00
Columbian.....	do.....	Sept. 9..	do.....	do.....	.....	Job	.....	do.....	do.....	2, 188 05
Southwester.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	5, 371 82
Elenora Carroll..	do.....	Sept. 11..	do.....	do.....	.....	.....	.....	do.....	do.....	118 62
Yankee and barge..	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	19, 614 00
May Bruner.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	456 17
Countess.....	do.....	do.....	do.....	do.....	.....	Job	.....	do.....	do.....	87 24
Tacony.....	do.....	Sept. 12..	do.....	do.....	.....	do..	.....	do.....	do.....	47 02
Paragon.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	1, 998 23
Sam Gaty.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	415 12
Commercial & barge	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	589 75
Reserve.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	703 20
Nannie Byers.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	1, 435 50
Magenta.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	1, 802 88
E. O. Stunard.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	145 61
Cuba.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	62 40
Benefit.....	do.....	Sept. 14..	do.....	do.....	.....	do..	.....	do.....	do.....	56 00
Mollie Dozier.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	2, 915 52
Rodolph.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	368 42
Columbian.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	728 00



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## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Jennie Lewis.....	Steamer.	1865. Sept. 22..	St. Louis, Mo.	Capt. L. S. Metcalf.	.....	Job.	1865.	St. Louis, Mo.	Capt. L. S. Metcalf.	\$974 67
Mattie .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	149 97
Cutter .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	1,180 57
Welcome .....	do.	Sept. 23..	do.	do.	.....	do.	do.	do.	do.	209 71
Countess .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	390 74
Annie Jacobs & b'ge ..	do.	do.	do.	do.	.....	do.	do.	do.	do.	2,793 73
Cleona .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	257 58
St. Patrick .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	1,565 57
Reserve and barge ..	do.	Sept. 25..	do.	do.	.....	do.	do.	do.	do.	391 68
Die Vernon .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	175 37
Glasgow .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	1,601 00
Armadilla .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	39 65
Lilly Martin .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	893 70
J. H. Whitelaw .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	54 88
Camelia .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	10 49
L. M. Kennett .....	do.	Sept. 26..	do.	do.	.....	do.	do.	do.	do.	7,202 49
Commercial .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	143 18
Magnolia .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	4,162 26
E. O. Stanard .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	24 35
Centralia .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	37 81
Commonwealth .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	3,205 43
Kate Kearney .....	do.	Sept. 27..	do.	do.	.....	do.	do.	do.	do.	315 34
Warsaw .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	360 93
J. H. Johnson .....	do.	Sept. 28..	do.	do.	.....	do.	do.	do.	do.	626 65
Rebecca .....	do.	Sept. 29..	do.	do.	.....	do.	do.	do.	do.	7 34
Victor No. 2 .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	190 34
Lucy Bertram .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	501 72
Countess and barge ..	do.	do.	do.	do.	.....	do.	do.	do.	do.	175 55
Commonwealth .....	do.	Sept. 30..	do.	do.	.....	do.	do.	do.	do.	635 94
Deer Lodge .....	do.	do.	do.	do.	.....	do.	do.	do.	do.	904 71

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Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earn-ings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Iron City.....	Steamer	1865. Oct. 12	St. Louis, Mo.	Capt. L. S. Metcalf.	.....	Job	1865.	St Louis, Mo.	Capt L. S. Metcalf.	\$147 53
Sir Wm. Wallace..	do	do	do	do	.....	do	do	do	do	152 14
America.....	do	Oct. 13	do	do	.....	do	do	do	do	94 22
Armadilla.....	do	do	do	do	.....	do	do	do	do	2,000 35
Emma No. 2.....	do	do	do	do	.....	do	do	do	do	1,940 50
Zephyr.....	do	do	do	do	.....	do	do	do	do	424 64
Paragon.....	do	Oct. 14	do	do	.....	do	do	do	do	91 33
Argos.....	do	do	do	do	.....	do	do	do	do	6,210 79
Laura.....	do	Oct. 16	do	do	.....	do	do	do	do	1,109 72
Albert Pearce.....	do	do	do	do	.....	do	do	do	do	469 15
Alamo.....	do	Oct. 17	do	do	.....	do	do	do	do	225 94
St. Patrick.....	do	do	do	do	.....	do	do	do	do	1,141 74
John Kilgore.....	do	do	do	do	.....	do	do	do	do	158 27
Glide No. 3.....	do	do	do	do	.....	do	do	do	do	227 26
W. A. Moffett & b'ge	do	do	do	do	.....	do	do	do	do	112 88
Laura Fenton.....	do	do	do	do	\$243 00	Day	Oct. 30	do	do	3,174 25
Rodolph.....	do	Oct. 18	do	do	.....	Job	do	do	do	126 30
Silver Wave & b'ge	do	do	do	do	.....	do	do	do	do	3,931 68
Columbian.....	do	Oct. 19	do	do	.....	do	do	do	do	888 60
G. McC. Porter and barge	do	Oct. 20	do	do	.....	do	do	do	do	201 80
Louisa, &c., & b'ge	do	do	do	do	.....	do	do	do	do	1,808 07
C. J. Caffrey.....	do	do	do	do	.....	do	do	do	do	894 42
Montana.....	do	do	do	do	.....	do	do	do	do	813 82
Magnolia.....	do	do	do	do	.....	do	do	do	do	2,426 91
Eleonora Carroll...	do	Oct. 21	do	do	.....	do	do	do	do	1,183 60
Ontario.....	do	do	do	do	.....	do	do	do	do	461 16
Silver Wave.....	do	do	do	do	.....	do	do	do	do	2,002 06
Gen. Buell & barge	do	Oct. 23	do	do	.....	do	do	do	do	580 00
Commonwealth.....	do	do	do	do	.....	do	do	do	do	4,430 22

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Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earn-ings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Silver Wave and b'ge	Steamer.	1866.	St. Louis, Mo.	Capt. G. P. Webster.	.....	Job..	1866.	St. Louis, Mo.	Capt. G. P. Webster.	\$6, 287 58
Commercial .....	do.....	Feb. 14	do.....	do.....	.....	do..	.....	do.....	do.....	2, 069 31
White Cloud No. 2	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	760 39
and barge.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	318 37
Sam Gaty.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	2, 489 67
Commonwealth .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	1, 702 67
Magnolia.....	do.....	Feb. 17	do.....	do.....	.....	do..	.....	do.....	do.....	2, 310 68
White Cloud No. 2.	do.....	Feb. 20	do.....	do.....	.....	do..	.....	do.....	do.....	10, 140 42
Maria Denning .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	71 82
Memphis.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	1, 093 76
Columbian .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	174 20
Henry Von Phul.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	148 30
Post Boy .....	do.....	Feb. 21	do.....	do.....	.....	do..	.....	do.....	do.....	11 73
Lewellen.....	do.....	Feb. 22	do.....	do.....	.....	do..	.....	do.....	do.....	730 41
W. H. Osborn.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	18 82
John Kilgore.....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	168 81
Sallie List .....	do.....	Feb. 23	do.....	do.....	.....	do..	.....	do.....	do.....	4, 537 27
Goldfinch .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	2, 120 43
Platte Valley.....	do.....	Feb. 24	do.....	do.....	.....	do..	.....	do.....	do.....	77 89
Iron City .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	20 88
Cornelia .....	do.....	Feb. 26	do.....	do.....	.....	do..	.....	do.....	do.....	25 39
Denver and barge .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	67 53
Laura .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	312 84
General Anderson .....	do.....	Feb. 28	do.....	do.....	.....	do..	.....	do.....	do.....	2, 764 65
Jo Diamond.....	do.....	Mar. 1	do.....	do.....	.....	do..	.....	do.....	do.....	3, 129 48
Memphis .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	3, 173 57
Agnes.....	do.....	Mar. 2	do.....	do.....	.....	do..	.....	do.....	do.....	417 59
Commercial .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	80 97
Paragon .....	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	1, 394 02
Little Rock .....	do.....	Mar. 5	do.....	do.....	.....	do..	.....	do.....	do.....	
	do.....	do.....	do.....	do.....	.....	do..	.....	do.....	do.....	



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Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Ozark .....	Steamer	1866. April 28	St. Louis, Mo.	Capt. G. P. Webster.	.....	Job	1866. .....	St. Louis, Mo.	Capt. G. P. Webster.	\$1,462 41
Golden Eagle.....	do	do	do	do	.....	do	do	do	do	117 32
Dora .....	do	do	do	do	.....	do	do	do	do	413 34
Talisman .....	do	April 30	do	do	.....	do	do	do	do	53 10
Paragon .....	do	do	do	do	.....	do	do	do	do	1,559 15
Imperial .....	do	do	do	do	.....	do	do	do	do	36 34
Anna White.....	do	do	do	do	.....	do	do	do	do	40 26
Albert Pearce.....	do	May 1	do	do	.....	do	do	do	do	1,298 01
Prairie State.....	do	do	do	do	.....	do	do	do	do	1,971 52
Henry S. Turner.....	do	May 2	do	do	.....	do	do	do	do	335 16
C. T. Caffrey.....	do	May 3	do	do	.....	do	do	do	do	442 95
G. McC. Porter.....	do	do	do	do	.....	do	do	do	do	52 08
Memphis.....	do	do	do	do	.....	do	do	do	do	1,736 10
Rob Roy.....	do	May 4	do	do	.....	do	do	do	do	1,010 52
Tahlequah .....	do	do	do	do	.....	do	do	do	do	1,565 75
Glasgow .....	do	do	do	do	.....	do	do	do	do	2,350 56
Fanny Ogden .....	do	May 5	do	do	.....	do	do	do	do	85 30
Peoria City.....	do	do	do	do	.....	do	do	do	do	1,383 60
Columbian .....	do	May 7	do	do	.....	do	do	do	do	3,931 36
Peoria City.....	do	do	do	do	.....	do	do	do	do	279 05
Imperial .....	do	May 9	do	do	.....	do	do	do	do	69 68
Minnie.....	do	do	do	do	.....	do	do	do	do	10,456 32
Alena May.....	do	May 11	do	do	.....	do	do	do	do	84 05
Henry Ames.....	do	do	do	do	.....	do	do	do	do	13 97
Tennessee .....	do	do	do	do	.....	do	do	do	do	794 07
Clara and barges.....	do	May 12	do	do	.....	do	do	do	do	2,484 25
Montana.....	do	May 14	do	do	.....	do	do	do	do	30 25
Henry S. Turner.....	do	do	do	do	.....	do	do	do	do	515 40
Ozark.....	do	do	do	do	.....	do	do	do	do	2,805 90
Guldon .....	do	May 15	do	do	.....	do	do	do	do	2,482 56

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Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earn-ings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Louisville.....	Steamer.	1866. June 14	St. Louis, Mo	Capt. G. P. Webster.	.....	.....	1866.	St. Louis, Mo	Capt. G. P. Webster.	\$25 95
M. S. Mepham.....	do.....	June 16	do.....	do.....	.....	.....	.....	do.....	do.....	45 37
Annie White.....	do.....	do.....	do.....	do.....	.....	Job.	.....	do.....	do.....	32 29
Amanda.....	do.....	June 18	do.....	do.....	.....	.....	.....	do.....	do.....	3,947 22
Jennie Lewis.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	35,911 78
Leonidas.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	24 57
Rowena.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	158 29
Ned Tracey.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	30,618 80
W. H. Osborn.....	do.....	June 19	do.....	do.....	.....	.....	.....	do.....	do.....	928 12
Dora.....	do.....	June 21	do.....	do.....	.....	.....	.....	do.....	do.....	4,678 92
Paragon.....	do.....	June 22	do.....	do.....	.....	.....	.....	do.....	do.....	1,367 55
Stonewall.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	4,233 84
Peoria City.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	2,536 19
War Eagle.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	355 70
Goldfinch.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	170 00
Armada.....	do.....	June 23	do.....	do.....	.....	.....	.....	do.....	do.....	86 84
Henry S. Turner.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	8,047 56
Rubicon.....	do.....	June 25	do.....	do.....	.....	.....	.....	do.....	do.....	16,125 48
Lexington.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	23,674 55
Minnie.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	1,824 00
Governor Sharkey.....	do.....	June 26	do.....	do.....	.....	.....	.....	do.....	do.....	5 41
Annie White.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	13 37
Post Boy & barge.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	2,622 33
Amaranth.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	10 00
Cumberland.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	427 57
Magnolia.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	23 75
Columbian.....	do.....	do.....	do.....	do.....	.....	.....	.....	do.....	do.....	3 50
M. S. Mepham.....	do.....	June 27	do.....	do.....	.....	.....	.....	do.....	do.....	9,322 19
Ned Tracey.....	do.....	June 28	do.....	do.....	.....	.....	.....	do.....	do.....	8,900 36
Henry S. Turner.....	do.....	June 29	do.....	do.....	.....	Job.	.....	do.....	do.....	23,450 54

[illegible]

Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earn-ings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Prima Donna.....	Steamer.	1865. July 1	Cincinnati, O	Capt. T. B. Hunt...	\$215 00	Day.	1865. July 8	Cincinnati, O	Capt. T. B. Hunt...	\$1,720 00
Robert Moore.....	do.	do.	do.	do.	207 50	do.	July 12	do.	do.	2,490 00
Rob Roy.....	do.	do.	do.	do.	177 50	do.	July 13	do.	do.	2,307 50
Starlight.....	do.	do.	do.	do.	200 00	do.	July 22	do.	do.	2,200 00
Viola.....	do.	do.	do.	do.	150 00	do.	July 23	do.	do.	3,450 00
Emerald.....	do.	do.	do.	do.	280 00	do.	July 27	do.	do.	7,560 00
Kate Robinson.....	do.	do.	do.	do.	200 00	do.	July 24	do.	do.	4,800 00
Lorena.....	do.	do.	do.	do.	210 00	do.	July 14	do.	do.	2,940 00
Madison.....	do.	do.	do.	do.	270 00	do.	July 15	do.	do.	4,060 00
Nashville.....	do.	do.	do.	do.	205 00	do.	July 9	do.	do.	1,845 00
N. Longworth.....	do.	do.	do.	do.	300 00	do.	July 26	do.	do.	7,800 00
America.....	do.	do.	do.	do.	210 00	do.	Aug. 4	do.	do.	7,350 00
Anna.....	do.	do.	do.	do.	185 00	do.	Aug. 12	do.	do.	7,955 00
Argonaut No. 2.....	do.	do.	do.	do.	205 00	do.	Aug. 2	do.	do.	6,765 00
Belle.....	do.	do.	do.	do.	180 00	do.	Aug. 8	do.	do.	7,020 00
Delaware.....	do.	do.	do.	do.	185 00	do.	Aug. 31	do.	do.	11,470 00
Majestic.....	do.	do.	do.	do.	185 00	do.	Aug. 12	do.	do.	2,220 00
Nora.....	do.	do.	do.	do.	205 00	do.	July 31	do.	do.	6,355 00
Ontario.....	do.	do.	do.	do.	215 00	do.	do.	do.	do.	6,665 00
Wananita.....	do.	do.	do.	do.	205 00	do.	July 15	do.	do.	3,075 00
Nevada.....	do.	do.	do.	do.	210 00	do.	July 31	do.	do.	6,510 00
George Glimmer.....	Barge.	do.	do.	do.	20 00	do.	July 18	do.	do.	360 00
Lambda No. 10.....	do.	do.	do.	do.	6 00	do.	July 8	do.	do.	48 00
Clark No. 26.....	do.	do.	do.	do.	6 00	do.	July 12	do.	do.	72 00
Davy.....	do.	do.	do.	do.	6 00	do.	Aug. 12	do.	do.	258 00
Storm No. 22.....	do.	do.	do.	do.	6 00	do.	Aug. 24	do.	do.	330 00
J. R. Gilmore No. 26.....	do.	do.	do.	do.	6 00	do.	Aug. 12	do.	do.	258 00
Olmstead & O'Con- nor.	do.	do.	do.	do.	6 00	do.	Sept. 4	do.	do.	396 00
S. G. No. 9.....	do.	do.	do.	do.	20 00	do.	Aug. 12	do.	do.	860 00



# REPORT OF THE SECRETARY OF WAR.

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## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	1865. Aug. 17	Cincinnati, O.	Capt. T. B. Hunt.	\$15 00	Day	1865. Aug. 21	Cincinnati, O.	Capt. T. B. Hunt.	Total earnings.
R. L. Wiley	Barge	Aug. 17	do.	do.	175 00	do.	Aug. 21	do.	do.	\$60 00
Leonora	Steamer	Aug. 27	do.	do.	205 00	do.	Sept. 3	do.	do.	1,211 45
Arizona	do.	Aug. 28	do.	do.	215 00	do.	Sept. 8	do.	do.	2,195 20
Nashville	do.	Sept. 1	do.	do.	15 00	do.	Oct. 15	do.	do.	9,522 07
Mattie	Barge	do.	do.	do.	15 00	do.	Dec. 15	do.	do.	656 87
R. C. Rogers	do.	do.	do.	do.	15 00	do.	do.	do.	do.	656 87
S. C. & S. Co., No. 43.	do.	do.	do.	do.	6 00	do.	Nov. 1	do.	do.	366 00
Lawrence	Steamer	Sept. 6	do.	do.	215 00	do.	Sept. 21	do.	do.	2,893 53
M. & S. McDonald.	Barge	Sept. 20	do.	do.	6 00	do.	March 6	do.	do.	1,002 00
Mariner	Steamer	Oct. 21	do.	do.	220 00	do.	Nov. 19	do.	do.	6,444 19
J. G. Blackford	Tow-b't	Jan. —	do.	do.	400 00	Voy's	do.	do.	do.	400 00
General Anderson	Steamer	July 1	Louisv'le, Ky	Capt. J. R. DelVecchio	207 00	Day	July 8	Louisv'le, Ky	Capt. J. R. DelVecchio	1,656 00
Anglo-Saxon	do.	do.	do.	do.	203 00	do.	Aug. 1	do.	do.	6,496 00
Edinburgh	do.	do.	do.	do.	205 96	do.	July 15	do.	do.	3,089 40
Palostine	do.	do.	do.	do.	196 34	do.	July 7	do.	do.	1,374 33
Rose Hite	do.	do.	do.	do.	190 60	do.	July 11	do.	do.	2,096 60
Financier	do.	do.	do.	do.	203 74	do.	July 24	do.	do.	4,849 76
Idaho	do.	do.	do.	do.	202 00	do.	do.	do.	do.	4,849 00
Clara Denning	do.	do.	do.	do.	187 26	do.	July 25	do.	do.	4,681 50
Huntsville	do.	do.	do.	do.	192 00	do.	July 19	do.	do.	3,648 00
Cora S.	do.	do.	do.	do.	192 00	do.	Aug. 13	do.	do.	8,352 00
Pioneer	do.	do.	do.	do.	160 00	do.	Aug. 3	do.	do.	5,440 00
Emma Floyd	do.	do.	do.	do.	136 73	do.	July 13	do.	do.	1,777 49
Battle List.	do.	do.	do.	do.	187 26	do.	Aug. 16	do.	do.	5,617 59
Irene	do.	do.	do.	do.	187 00	do.	Aug. 18	do.	do.	9,110 25

# REPORT OF THE SECRETARY OF WAR.

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## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Ella Faber .....	Steamer	1865. July 26	Louisv'le, Ky	Capt. J. R. DelVecchio		Job..	1865. Aug. 31	Louisv'le, Ky	Capt. J. R. DelVecchio	\$8, 637 68
Gray Eagle .....	do....	July 27	do....	do....		do....	do....	do....	do....	44 78
Edinburgh .....	do....	July 28	do....	do....		do....	do....	do....	do....	2, 637 00
Morning Star .....	do....	July 29	do....	do....		do....	do....	do....	do....	212 81
Rose Hite .....	do....	Aug. 5	do....	do....		do....	do....	do....	do....	2 60
Aurora .....	do....	do....	do....	do....		do....	do....	do....	do....	10, 964 09
Pink Varble .....	do....	do....	do....	do....	\$198 16	Day	Sept. 8	do....	do....	6, 828 19
National .....	do....	Aug. 7	do....	do....		Job	do....	do....	do....	58 15
Edinburgh .....	do....	Aug. 9	do....	do....		do....	do....	do....	do....	1, 134 40
Warren Bell .....	do....	Aug. 11	do....	do....		do....	do....	do....	do....	61 49
Blue Wing No. 3 ..	do....	Aug. 12	do....	do....		do....	do....	do....	do....	43 06
Tacony .....	do....	do....	do....	do....		do....	do....	do....	do....	153 84
Leni Leoti .....	do....	Aug. 14	do....	do....		do....	do....	do....	do....	624 76
Anglo-Saxon .....	do....	do....	do....	do....		do....	do....	do....	do....	7, 015 00
Pilgrim .....	do....	do....	do....	do....		do....	do....	do....	do....	1, 390 30
Amelia Poe .....	do....	Aug. 17	do....	do....		do....	do....	do....	do....	1, 621 40
Barney .....	Barge	do....	do....	do....	20 00	Day	Sept. 1	do....	do....	320 00
Indiana .....	Steamer.	Aug. 19	do....	do....		Job	do....	do....	do....	39 25
Edinburgh .....	do....	do....	do....	do....	203 30	Day	Sept. 4	do....	do....	3, 343 62
Liberty No. 2 .....	do....	Aug. 20	do....	do....		Job	do....	do....	do....	326 25
Robert Moore .....	do....	Aug. 21	do....	do....		do....	do....	do....	do....	1, 255 50
W. R. Carter .....	do....	do....	do....	do....		do....	do....	do....	do....	8, 912 02
St. Nicholas .....	do....	do....	do....	do....		do....	do....	do....	do....	701 50
Fannie Brandies ..	do....	Aug. 22	do....	do....		do....	do....	do....	do....	15 36
St. Patrick .....	do....	Aug. 23	do....	do....		do....	do....	do....	do....	835 62
Elenora .....	do....	Aug. 24	do....	do....		do....	do....	do....	do....	16 46
Indiana .....	do....	do....	do....	do....		do....	do....	do....	do....	2, 517 09
Lady Gay .....	do....	do....	do....	do....		do....	do....	do....	do....	4 01
Elenora .....	do....	Aug. 28	do....	do....		do....	do....	do....	do....	34 75
Norman .....	do....	Aug. 29	do....	do....		do....	do....	do....	do....	52 83

# REPORT OF THE SECRETARY OF WAR.

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• *Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.*

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Norman.....	Steamer.	1865. Oct. 16	Louisv'e, Ky.	Capt. J. R. DelVecchio			1865.	Louisv'e, Ky.	Capt. J. R. DelVecchio	\$55 16
Robert Fulton.....	do.....	do.....	do.....	do.....			do.....	do.....	do.....	2,500 00
Norman.....	do.....	Oct. 19	do.....	do.....			do.....	do.....	do.....	734 25
Dunkerson.....	do.....	Oct. 20	do.....	do.....			do.....	do.....	do.....	34 50
St. Nicholas.....	do.....	Oct. 21	do.....	do.....			do.....	do.....	do.....	6 00
Norman.....	do.....	Oct. 26	do.....	do.....			do.....	do.....	do.....	88 00
Huntsville.....	do.....	Oct. 28	do.....	do.....			do.....	do.....	do.....	121 32
Pink Varble.....	do.....	Oct. 30	do.....	do.....			do.....	do.....	do.....	1,107 12
Ross.....	do.....	do.....	do.....	do.....			do.....	do.....	do.....	328 27
J. G. Blackford.....	do.....	Oct. 31	do.....	do.....		Job.	do.....	do.....	do.....	18 56
Norman.....	do.....	do.....	do.....	do.....		do.	do.....	do.....	do.....	41 81
Palestine.....	do.....	Nov. 1	do.....	do.....		do.	do.....	do.....	do.....	32 79
News Boy.....	do.....	Nov. 2	do.....	do.....		do.	do.....	do.....	do.....	364 15
Ella Faber.....	do.....	Nov. 3	do.....	do.....	\$200 00	Day	Nov. 12	do.....	do.....	1,833 33
St. Nicholas.....	do.....	Nov. 8	do.....	do.....		Job	do.....	do.....	do.....	6 00
Havana.....	do.....	Nov. 9	do.....	do.....		do.	do.....	do.....	do.....	18 89
Morning Star.....	do.....	do.....	do.....	do.....		do.	do.....	do.....	do.....	30 17
Bermuda.....	do.....	Nov. 12	do.....	do.....		do.	do.....	do.....	do.....	976 86
Palestine.....	do.....	Nov. 13	do.....	do.....		do.	do.....	do.....	do.....	78 75
Huntsville.....	do.....	Nov. 17	do.....	do.....		do.	do.....	do.....	do.....	4,229 25
Palestine.....	do.....	do.....	do.....	do.....		do.	do.....	do.....	do.....	291 75
Lorena.....	do.....	do.....	do.....	do.....		do.	do.....	do.....	do.....	23 26
C. E. Hillman.....	do.....	Nov. 20	do.....	do.....		do.	do.....	do.....	do.....	1,224 31
Indiana.....	do.....	Nov. 23	do.....	do.....		do.	do.....	do.....	do.....	1,706 80
News Boy.....	do.....	Nov. 25	do.....	do.....		do.	do.....	do.....	do.....	27 72
Princess.....	do.....	Nov. 27	do.....	do.....		do.	do.....	do.....	do.....	295 46
Tyron o.....	do.....	Nov. 28	do.....	do.....		do.	do.....	do.....	do.....	353 37
New State.....	do.....	do.....	do.....	do.....		do.	do.....	do.....	do.....	40 09
National.....	do.....	Dec. 2	do.....	do.....		do.	do.....	do.....	do.....	1,014 14
Amanda.....	do.....	Dec. 8	do.....	do.....		do.	do.....	do.....	do.....	407 73



# REPORT OF THE SECRETARY OF WAR.

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## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Morning Star.....	Steamer	1866. May —	Louisv'le Ky	Col. R. N. Batchelder			1866.	Louisv'le Ky	Col. R. N. Batchelder	\$80 76
Tempest .....	do	do	do	do				do	do	333 00
Taliquam .....	do	do	do	do				do	do	48 72
Kentucky.....	do	1865. July 1	Nashv'le, Ten	Capt. E. B. Kirk	\$45 00	Day	1865. Sept. 25	Nashv'le, Ten	Capt. S. B. Brown	3,915 00
Piketon .....	do	do	do	do	100 00	do	Oct. 23	do	do	11,500 00
Ollie Sullivan.....	do	do	do	do	100 00	do	Aug. 31	do	do	6,200 00
A. Baker.....	do	do	do	do	125 00	do	July 5	do	Capt. E. B. Kirk	625 00
General Sigel .....	do	do	do	do	125 00	do	do	do	do	625 00
A. Baker.....	do	July 13	do	do	100 00	do	Oct. 12	do	Capt. S. B. Brown	9,100 00
Science, No. 2.....	do	July 1	do	Capt. S. B. Brown	165 00	do	July 25	do	do	4,125 00
Aid .....	do	Oct. 4	do	do	75 00	do	Oct. 11	do	do	525 00
A. Baker.....	do	Dec. 22	do	do	125 00	do	Dec. 22	do	do	125 00
A. Baker.....	do	1866. Jan. 5	do	do	150 00	do	Jan. 19	do	do	2,250 00
News Boy.....	do	1865. Nov. —	Paducah, Ky	Capt. J. H. Wilson		Job		Paducah, Ky	Capt. J. H. Wilson	150 00
Sunny South .....	do	July 1	Memphis, Ten	Col. L. S. Van Vliet	No rate	fixed	Aug. 14	Memphis, Ten	Col. L. S. Van Vliet	
Hamilton Belle .....	do	do	do	do		Job	Aug. 8	do	do	
C. E. Hillman .....	do	do	do	do		do	July 31	do	do	
S. B. Young.....	do	do	do	do		do	July 22	do	do	
Rose Hambleton .....	do	do	do	do		do	Sept. 9	do	do	
Golden Era .....	do	do	do	do		do	Aug. 31	do	do	
Belfast.....	do	do	do	do		do	Aug. 15	do	do	
Gem.....	do	Aug. 4	L. Rock, Ark	Col. H. T. Noble	No rate	fixed	Aug. 13	L. Rock, Ark	Col. H. T. Noble	
Kate Bruner.....	do	Sept. 11	do	do	128 00	Day	Sept. 18	do	do	896 00
Alamo .....	do	Oct. 15	do	do	127 65	do	Oct. 21	do	do	829 73
Kate Bruner .....	do	Nov. —	do	do		Job		do	do	32 65
Albert Pearce .....	do	do	do	do		do		do	do	754 35
T. S. Hall .....	do	do	do	do		do		do	do	340 31
Southern Belle .....	do	do	do	do		do		do	do	59 22

# REPORT OF THE SECRETARY OF WAR.

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Statement of vessels chartered or employed by the Quartermaster's Department, &c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earn- ings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Sam Gaty.....	Steamer	1866. Feb. —	Little Rock.	Col. H. T. Noble.....	.....	Job..	1866.	L. Rock, Ark.	Col. H. T. Noble....	\$196 91
Zephyr.....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	2,944 96
Justice.....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	132 02
Albert Pearce .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	1,026 66
Sallie List .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	1,209 58
Little Rock .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	7,417 27
Only Chance.....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	13 13
Gleaner.....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	1,108 40
Deer Lodge .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	84 36
Osage .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	165 21
Agnes .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	1,897 50
Linnie Droun .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	7 50
American .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	385 20
Argos .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	2,504 43
T. S. Hall .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	1,010 67
Southern Belle.....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	44 00
Commercial .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	202 49
Princess .....	do.....	March —	do.....	do.....	.....	do.....	do.....	do.....	do.....	217 65
American .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	917 50
Zephyr .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	140 84
Memphis .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	341 88
Alena May .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	1,384 16
Pilgrim.....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	28 41
Little Rock .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	4,132 74
Guidon .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	176 50
Osage .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	25 01
Justice .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	56 31
Deer Lodge .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	16 86
Minnow .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	183 42
Southern Belle .....	do.....	do.....	do.....	do.....	.....	do.....	do.....	do.....	do.....	9 00

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## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
Kate Bruner.....	Steamer.	1866.	Little Rock.	Col. H. T. Noble.	.....	Job	.....	Little Rock.	Col. H. T. Noble	\$3,243 03
Ozark .....	do.	May —	do.	do.	.....	do.	.....	do.	do.	8 05
Albert Pearce.....	do.	June —	do.	do.	.....	do.	.....	do.	do.	402 37
Des Arc.....	do.	do.	do.	do.	.....	do.	.....	do.	do.	257 76
Pilgrim .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	2,408 50
Argos & barge .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	9,488 81
T. S. Hall.....	do.	do.	do.	do.	.....	do.	.....	do.	do.	8,201 07
American .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	7,762 87
J. S. McCune & b'ge .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	1,100 70
Commercial .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	284 38
Governor Sharkey .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	12 42
Minnie .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	21 16
Justice .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	108 74
Petrolia.....	do.	do.	do.	do.	.....	do.	.....	do.	do.	1 50
Woodward .....	do.	do.	do.	do.	.....	do.	.....	do.	do.	
Nevada .....	do.	1865	Vicksburg.	Capt. W. F. Kerns.	.....	Day	Aug. 8	Vicksburg	Capt. W. F. Kerns.	3,900 00
Olive Branch.....	do.	July 1	Port Hudson	Capt. B. J. F. Hanna	\$100 00	Job	.....	Port Hudson	Capt. B. J. F. Hanna	9 50
Ruth .....	do.	July 2	do.	do.	.....	do.	.....	do.	do.	28 60
Monsoon.....	do.	Aug. 13	do.	do.	.....	do.	.....	do.	do.	8 75
Louis D'or .....	do.	Aug. 24	do.	do.	.....	do.	.....	do.	do.	
	do.	Aug. 28	Alexandria,	do.	.....	do.	.....	do.	do.	
	do.		La	Lt. S. L. Baltzell.	Norate	fixed	Aug. 31	Alex., La	Lt. S. L. Baltzell.	
Lady .....	do.	Nov. 14	do.	do.	.....	Job	.....	do.	do.	1,972 93
Lady .....	do.	Nov. 20	do.	do.	.....	do.	.....	do.	do.	3,788 40
Hettie Gilmore.....	do.	Nov. 30	do.	do.	.....	do.	.....	do.	do.	2,425 00
Gem.....	do.	Dec. —	do.	do.	.....	do.	.....	do.	do.	1,195 00
Algerine .....	do.	July 1	New Orleans	Capt. G. A. Norton.	70 00	Day	July 5	New Orleans	Capt. G. A. Norton	350 00
W. H. Osborn.....	do.	do.	do.	do.	330 00	do.	July 16	do.	do.	5,280 00
Reserve.....	do.	do.	do.	do.	240 00	do.	July 28	do.	do.	6,720 00
Anna Penitt.....	do.	do.	do.	do.	235 00	do.	July 13	do.	do.	3,055 00



Hen. Franklin	do.	do.	do.	do.	do.	85 00	do.	July	6	do.	do.	510 00
Groesbeck	do.	do.	do.	do.	do.	272 00	do.	Aug.	1	do.	do.	8,432 00
Glendale	do.	do.	do.	do.	do.	230 00	do.	Aug.	15	do.	do.	1,058 00
Bart Able	do.	do.	do.	do.	do.	260 00	do.	July	13	do.	do.	3,380 00
Tarascon	do.	do.	do.	do.	do.	490 00	do.	July	29	do.	do.	14,210 00
Pierless	do.	do.	do.	do.	do.	283 00	do.	Sept.	7	do.	do.	10,754 00
Countess	do.	do.	do.	do.	do.	180 00	do.	July	18	do.	do.	3,240 00
White Cloud	do.	do.	do.	do.	do.	225 00	do.	Jan.	14	do.	do.	44,550 00
Iatan	do.	do.	do.	do.	do.	248 00	do.	July	4	do.	do.	992 00
Golden Era	do.	do.	do.	do.	do.	223 00	do.	Aug.	19	do.	do.	11,150 00
White Cloud No. 2.	do.	do.	do.	do.	do.	405 00	do.	Aug.	26	do.	do.	23,085 00
Polar Star	do.	do.	do.	do.	do.	55 00	do.	Aug.	5	do.	do.	1,900 00
Genova	do.	do.	do.	do.	do.	193 00	do.	Sept.	22	do.	do.	16,212 00
Liberty	do.	do.	do.	do.	do.	85 00	do.	July	16	do.	do.	1,360 00
Leonora	do.	do.	do.	do.	do.	245 00	do.	Sept.	19	do.	do.	19,600 00
National	do.	do.	do.	do.	do.	258 27	do.	July	23	do.	do.	5,940 21
Crescent	do.	do.	do.	do.	do.	Norate	fixed	July	5	do.	do.	
Savannah	do.	do.	do.	do.	do.	do.	do.	Aug.	31	do.	do.	
Charley Bowen	do.	do.	do.	do.	do.	195 00	Day	Oct.	6	do.	do.	12,315 75
Aurora	do.	do.	do.	do.	do.		Job			do.	do.	1,200 00
Charley Bowen	do.	do.	do.	do.	Capt.A.J.McGonnigle		do.			do.	Capt.A.J.McGonnigle	600 00
Grey Eagle	do.	do.	do.	do.	do.		do.			do.	do.	458 28
Judge Fletcher	do.	do.	do.	do.	do.		do.			do.	do.	151 29
Trade Wind	do.	do.	do.	do.	do.		do.			do.	do.	45 00
Huntress	do.	do.	do.	do.	do.		do.			do.	do.	10 92
Hayes	do.	do.	do.	do.	do.		do.			do.	do.	30 00
N.P.Bauks	do.	do.	do.	do.	do.		do.			do.	do.	120 00
W.R.Arthur	do.	do.	do.	do.	do.		do.			do.	do.	451 82
Maria	do.	do.	do.	do.	do.		do.			do.	do.	1,765 06
Mollie Able	do.	do.	do.	do.	do.		do.			do.	do.	43 35
Gen. Quitman	do.	do.	do.	do.	do.		do.			do.	do.	563 25
Lady	do.	do.	do.	do.	do.		do.			do.	do.	1,754 00
Mutie Stephens	do.	do.	do.	do.	do.		do.			do.	do.	174 20
McGill	do.	do.	do.	do.	do.		do.			do.	do.	90 42
Annie E.	do.	do.	do.	do.	do.		do.			do.	do.	39 63
Lilly Martin	do.	do.	do.	do.	do.		do.			do.	do.	36 96
Touawanda	do.	do.	do.	do.	do.		do.			do.	do.	165 00
Arizona	do.	do.	do.	do.	do.		do.			do.	do.	24 05
Louisiana	do.	do.	do.	do.	do.		do.			do.	do.	16 52

## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By whom.			When.	Where.	By whom.	
George.....	Steamer	1865.	New Orleans	Capt. A. J. McGonnigle	.....	Job	.....	New Orleans	Capt. A. J. McGonnigle	\$957 20
W. H. Osborn.....	do.....	Dec. 20	do.....	do.....	.....	do.....	.....	do.....	do.....	677 90
Majestic.....	do.....	Dec. 22	do.....	do.....	.....	do.....	.....	do.....	do.....	53 90
J. C. Leach.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	59 58
E. O. Stunard.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	7 24
Golden Era.....	do.....	Dec. 30	do.....	do.....	.....	do.....	.....	do.....	do.....	20 28
Alexander Speirs.....	do.....	1866.	do.....	do.....	.....	do.....	.....	do.....	do.....	703 98
Alpha.....	do.....	Jan. 5	do.....	do.....	.....	do.....	.....	do.....	do.....	1,949 31
National.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	632 50
Lady.....	do.....	Jan. —	do.....	do.....	.....	do.....	.....	do.....	do.....	75 65
National.....	do.....	Jan. 22	do.....	do.....	.....	do.....	.....	do.....	do.....	430 25
R. J. Lockwood.....	do.....	Jan. 20	do.....	do.....	.....	do.....	.....	do.....	do.....	480 86
Maria Denning.....	do.....	Feb. 2	do.....	do.....	.....	do.....	.....	do.....	do.....	979 58
Island Belle.....	do.....	Feb. 13	do.....	do.....	.....	do.....	.....	do.....	do.....	841 25
Ned Tracey.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	16 82
Beulah.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	6 80
Atlantic.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	1,823 85
M. E. Allen.....	do.....	Feb. 16	do.....	do.....	.....	do.....	.....	do.....	do.....	30 27
Maggie Hays.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	34 08
Planet.....	do.....	Feb. 22	do.....	do.....	.....	do.....	.....	do.....	do.....	177 94
Reindeer.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	6,671 00
New Era.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	119 70
Wm. Butler.....	do.....	Feb. 24	do.....	do.....	.....	do.....	.....	do.....	do.....	11 50
Caddo.....	do.....	Feb. 26	do.....	do.....	.....	do.....	.....	do.....	do.....	39 87
H. Ames.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	2,414 25
Camelia.....	do.....	do.....	do.....	do.....	.....	do.....	.....	do.....	do.....	184 45
David Watts.....	do.....	Feb. —	do.....	do.....	.....	do.....	.....	do.....	do.....	16 90
C. Bowen & barge	do.....	Feb. —	do.....	do.....	.....	do.....	.....	do.....	do.....	262 30
Henry Von Phul.....	do.....	Feb. —	do.....	do.....	.....	do.....	.....	do.....	do.....	1,019 71



## Statement of vessels chartered or employed by the Quartermaster's Department, &amp;c.—Continued.

Name of vessel.	Class.	TAKEN INTO SERVICE.			Amount.	Per—	DISCHARGED.			Total earnings.
		When.	Where.	By Whom.			When.	Where.	By whom.	
Starlight.....	Steamer.	1866. Mar. 20..	N. Orleans.	Capt. A. S. McGonnigle	.....	Job.	.....	N. Orleans.	Capt. A. S. McGonnigle	\$98 83
Lillian.....	do.....	Mar. 22..	do.....	do.....	.....	do.	.....	do.....	do.....	61 20
W. H. Osborn & b'g	do.....	Mar. 23..	do.....	do.....	.....	do.	.....	do.....	do.....	1,206 01
John Kilgore.....	do.....	Mar. 24..	do.....	do.....	.....	do.	.....	do.....	do.....	875 07
Grey Eagle.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	235 71
St. Nicholas.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	16 00
Welcome.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	83 50
Plain City.....	do.....	Mar. 26..	do.....	do.....	.....	do.	.....	do.....	do.....	21 00
J. M. Sharp & barge	do.....	Mar. 27..	do.....	do.....	.....	do.	.....	do.....	do.....	8 45
Ida Handy.....	do.....	Mar. 29..	do.....	do.....	.....	do.	.....	do.....	do.....	910 30
General Quitman	do.....	Mar. 30..	do.....	do.....	.....	do.	.....	do.....	do.....	1,046 54
Morgan.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	19 50
Mississippi.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	341 70
Ruth.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	239 90
Castro.....	do.....	Mar. 31..	do.....	do.....	.....	do.	.....	do.....	do.....	373 90
J. M. Sharp.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	105 68
Lafourche.....	do.....	Mar. —	do.....	do.....	.....	do.	.....	do.....	do.....	442 00
T. D. Hines.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	27 15
Nina Simmes.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	705 85
Magnolia.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	342 00
Plain City.....	do.....	April 1..	do.....	do.....	.....	do.	.....	do.....	do.....	228 42
Cricket.....	do.....	April 2..	do.....	do.....	.....	do.	.....	do.....	do.....	14 00
Levi Oats.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	205 25
Indiana.....	do.....	May 10..	do.....	do.....	.....	do.	.....	do.....	do.....	24 25
Monsoon.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	219 63
Lafourche.....	do.....	May 12..	do.....	do.....	.....	do.	.....	do.....	do.....	536 00
Sonora.....	do.....	do.....	do.....	do.....	.....	do.	.....	do.....	do.....	3 65
Irene.....	do.....	May 16..	do.....	do.....	.....	do.	.....	do.....	do.....	6 00
Nina Simmes.....	do.....	May 19..	do.....	do.....	.....	do.	.....	do.....	do.....	177 11
Ruth.....	do.....	May 22..	do.....	do.....	.....	do.	.....	do.....	do.....	60 05



No. 13.—Statement of claims received in the Fourth Division of the Quartermaster General's office during the fiscal year ending June 30, 1866, showing the disposition thereof.

REPORT OF THE SECRETARY OF WAR.

Nature of service.	Number of claims.	Total amount of claims.	Amount examined and referred for settlement.	Amount rejected and deducted.	Amount awaiting action.
Transporting troops and government supplies .....	1, 915	\$3, 711, 305 29½	\$2, 477, 144 73	\$343, 539 34	\$890, 621 22½
Hire, value, and damages to western river steamboats and barges .....	138	886, 083 21	144, 745 48	424, 974 59	316, 363 14
Railroad property seized, used, or destroyed by United States authorities .....	7	158, 081 22	30, 559 40	127, 521 82	.....
Materials furnished United States military railroads .....	60	212, 004 80	33, 448 54	137, 197 18	41, 359 08
Employés on United States military railroads .....	485	37, 023 80	8, 372 83	6, 315 57	22, 335 40
Employés on United States western river steamers .....	156	27, 303 24	3, 061 71	3, 599 79	20, 641 74
Materials furnished and services rendered in repairing United States western river steamers .....	24	9, 314 85	2, 568 08	3, 510 97	3, 235 80
Services of telegraph companies .....	10	5, 912 02	5, 687 17	.....	224 85
Employés on United States military telegraph .....	18	2, 318 81	1, 258 16	900 00	160 65
Lithographing and numbering United States transportation orders .....	8	9, 197 51	9, 197 51	.....	.....
Advertising government sales of transportation property .....	28	8, 227 50	7, 940 38	.....	287 12
Storage .....	2	653 32	153 17	35 15	465 00
Total amount .....	.....	5, 067, 425 57½	2, 724, 137 16	1, 047, 594 41	1, 295, 694 00½
Total number of claims .....	2, 851	.....	.....	.....	.....

Respectfully submitted to the Quartermaster General:

ALEXANDER BLISS,  
Colonel Q. M. Dep't, Brevet Colonel U. S. A., in charge Fourth Division.



## No. 7.

## MILITARY RAILROADS OF THE UNITED STATES.

OFFICE OF DIRECTOR AND GENERAL MANAGER  
MILITARY RAILROADS OF THE UNITED STATES,  
*Washington, D. C., 1866.*

GENERAL: I have the honor to submit the following report upon the military railroads of the United States under my charge during the war.

On the 11th day of February, 1862, I received the following order:

“WAR DEPARTMENT,  
“*Washington City, D. C., February 11, 1862.*

“*Ordered*, That D. C. McCallum be, and he is hereby, appointed military director and superintendent of railroads in the United States, with authority to enter upon, take possession of, hold, and use all railroads, engines, cars, locomotives, equipments, appendages, and appurtenances that may be required for the transport of troops, arms, ammunition, and military supplies of the United States, and to do and perform all acts and things that may be necessary and proper to be done for the safe and speedy transport aforesaid.

“By order of the President, commander-in-chief of the army and navy of the United States:

“EDWIN M. STANTON,  
“*Secretary of War.*”

Upon assuming the duties indicated by the above order, I found only one railroad in possession of the government—that from Washington to Alexandria, seven miles long, and in charge of Captain R. F. Morley, assistant quartermaster.

Under an order from the War Department, dated January 10, 1862, the track had been relaid with new T rails, the entire road-bed repaired, and a track laid across the Long bridge over the Potomac river.

Previously, all passengers and freight had been transferred across the bridge by horse-power.

In Alexandria the tracks had been laid through the city to form a junction with the Orange and Alexandria railroad. The road was used regularly and continuously without interruption from this time forward until the close of the war, and on the 7th day of August, 1865, was surrendered to the Alexandria, Washington, and Georgetown Railroad Company.

During the period of its military occupation, the value of construction and repairs made upon it, not properly chargeable to the cost of operation, amounted to \$107,328 88.

The transportation from February 9, 1862, to August 7, 1865, three years, five months, and twenty-eight days, was as follows:

Number of engines run over the road for other than local construction purposes.....	8, 983
Number of loaded cars.....	30, 457
Number of empty cars.....	20, 699
Total number of cars.....	51, 156

In March, 1862, Major General McClellan instructed me to have a line examined for a railroad from Winchester, the terminus of the Harper's Ferry and

Winchester railroad, to Strasburg, a station of the Manassas Gap railroad in the Shenandoah valley, and to make an estimate of the cost. This was completed early in April, but the railroad was not built.

March 14, 1862, General McClellan instructed me to have five locomotives and eighty cars loaded upon vessels in the harbor of Baltimore, and held subject to his orders, with a view to using them in his contemplated peninsular campaign.

They were purchased from northern railroad companies, loaded as directed, and remained on the vessels until early in May, when they were sent to White House, Virginia, and placed upon the Richmond and York River railroad.

Another engine was added in June to the number, and all employed in transporting supplies between White House and the front, which, toward the close of June, was twenty miles from White House, and four miles from Richmond. Upon the withdrawal of the army of the Potomac to Harrison's Landing, June 28, all the rolling-stock was destroyed or damaged, as far as practicable, to prevent it from falling into the hands of the enemy.

Near the close of March, 1862, the Orange and Alexandria railroad was opened to Manassas Junction, twenty-six miles from Alexandria, and in April to Warrenton Junction, thirty-nine miles. In August, after relaying six miles of track and bridging Rappahannock river, the road was opened to Culpeper, sixty-one miles, which at the time was the main depot of supplies for the army of Virginia. A few trains were run to the Rapidan river, eighty miles. Upon the retreat of General Pope, in the last days of August, the road was entirely abandoned, with the loss of seven locomotives and two hundred and ninety-five cars. In November it was reopened for a few days to Bealton, forty-six miles, and to the town of Warrenton, to supply the army of the Potomac on its march from Antietam to Fredericksburg.

The Manassas Gap railroad was opened early in April, 1862, to Strasburg, sixty-one miles from Manassas, and eighty-seven miles from Alexandria. It was operated only a very short time from Strasburg, but continued in use to Front Royal, fifty-one miles from Manassas, through May and part of June, when it was abandoned. In November, 1862, trains were run over it to Front Royal for a few days, with supplies for General McClellan's army.

The Alexandria, Loudon, and Hampshire railroad was opened in the spring of 1862 to Vienna, fifteen miles from Alexandria, and used for transporting supplies to the fortifications south of Washington, and the camps along its line. During the first two weeks of September it was the principal line of supply for the army of the Potomac, when encamped near Washington after the second battle of Bull Run, and previous to the Antietam campaign.

These four railroads comprise all that were operated as military lines from Alexandria and Washington. They were subsequently used, more or less, at various times, as will be mentioned hereafter, and continued to play an important part in the operations of the army of the Potomac.

In April, 1862, the Richmond, Fredericksburg, and Potomac railroad was opened from Aquia Creek to Fredericksburg, fifteen miles, and operated to supply the forces stationed at Fredericksburg. The road was abandoned September 7, with the loss of one engine, fifty-seven cars, and a small quantity of material. On the 18th of November repairs were again commenced, and the road was opened on the 28th to Falmouth, opposite Fredericksburg, and was used to supply the army of the Potomac until June, 1863. A very large amount of work was required, not only to the railroad, but to the wharves at Aquia Creek, all of which had been burned when this line was abandoned by our forces. The limited accommodations for receiving and delivering freight and passengers at Aquia, rendered an increase of wharf-room and tracks necessary, and a new wharf, afterwards named Yuba Dam, was completed in February, one mile below the Aquia Creek wharf, and the necessary tracks laid from the main road

it. Vessels drawing ten and a half feet of water could land at the new wharve at low tide, while there was only eight and a half feet at high water at the old one. This improvement proved a valuable acquisition to the means of supplying the army. The road continued to be used without interruption until June, 1863, when it was abandoned with small loss of material; but the bridges, buildings, and wharves were soon afterwards burned by the enemy.

The eastern portion of the Norfolk and Petersburg railroad was taken in charge July 20, 1862, and the gauge at once changed from five feet to four feet and eight and a half inches for forty-four miles. At Suffolk, twenty-three miles from Norfolk, this line crosses the Seaboard and Roanoke railroad, running from Portsmouth, opposite Norfolk. A connecting track was laid between the two roads in August, 1862, and these lines were afterwards operated together. In May, 1863, about fifteen miles of track were taken up on the Norfolk and Petersburg railroad west of Suffolk by order of Major General Dix, and about the same length on the Seaboard and Roanoke. The two roads were afterwards operated to Suffolk, until the close of the war, for local military purposes, and were not identified with any of the great military operations or campaigns.

From July 22, 1862, to June 30, 1863, the transportation over them was as follows: Troops, 107,359 men; quartermaster's stores, 23,757 tons; subsistence stores, 9,043 tons; ordnance stores, 2,353 tons; total stores, 35,153 tons.

In April, 1863, the Orange and Alexandria railroad was opened to Bealton, and used a few days to supply a force on the Rappahannock. The portion south of Bull Run was then abandoned, and about the 15th of June the whole road outside the defences of Washington was evacuated. July 18, repairs were recommenced and continued till the road was opened to Culpeper. Not having been much damaged by the enemy, the amount of work necessary to put it in running order was small. It was used until the first of October to supply the army of General Meade, after its return to Virginia from the Gettysburg campaign.

Early in October it was again abandoned south of Bull Run, and was thoroughly destroyed by the enemy from Manassas Junction nearly to Brandy station, about twenty-two miles. Repairs were commenced October 23, and the damaged road opened October 30 to Warrenton Junction, eleven miles, and to Culpeper November 16, to which point it was operated during the winter, and until the final advance, under Lieutenant General Grant, of the army of the Potomac, May 4, 1864, when it was abandoned beyond Burke's station, fourteen miles from Alexandria. Rappahannock river bridge, six hundred and twenty-five feet long and thirty-five feet high, was rebuilt in nineteen working hours. The army of the Potomac remained in winter quarters on the south side of the Rappahannock, and received all its supplies for men and animals during the winter and spring over this single-track road.

The Manassas Gap railroad was re-opened to White Plains, twenty-three miles from Manassas, in August, 1863, and used for a few days to deliver supplies for General Meade's army, on the march from Gettysburg to Culpeper.

On the 2d day of July, 1863, military possession was taken of the Western Maryland railroad, from Baltimore to Westminster, in Maryland, thirty-six miles, which, from its position, had become the line of supply for the army of General Meade, at Gettysburg. Sufficient locomotives, cars, fuel, supplies, and men to operate it, were brought from the military railroads of Virginia, the equipment belonging to the road itself being wholly inadequate. The road was restored to the owners July 7, the army having moved to the line of the Baltimore and Ohio railroad.

July 9, 1863, full military possession was taken of the railroad from Hanover Junction to Gettysburg, thirty miles, and it was operated as a military line until August 1, to remove the wounded from the field of battle to distant hospitals. During military occupation, about 15,580 wounded men were transported over

it. The equipment and men for this work were likewise furnished from the military railroads of Virginia.

During the rebel occupation of central Pennsylvania in June, all the bridges were destroyed by them on the Northern Central railroad between Hanover Junction and Harrisburg, and several miles of track torn up on the Cumberland Valley and Franklin railroads between Harrisburg and Hagerstown, Maryland. The Virginia military railroad construction corps rebuilt the bridges of the Northern Central railroad. The materials for the same were furnished from the government yard at Alexandria, Virginia. The railroad company afterwards returned an equal quantity of material, the lumber amounting to 150,000 feet board measure. The same construction corps also relaid a portion of the damaged track of the Cumberland Valley and Franklin railroads.

As the war progressed, the nature, capacity, and value of railroads were better understood on both sides, and more systematic and determined efforts were made by the enemy against the lines used for transporting supplies to our armies. The destruction of track and bridges was greater each subsequent time the roads passed within their military lines, and it became apparent that extraordinary preparations must be made to meet it.

Early in 1863 a small construction corps was formed, consisting of about three hundred men, which was the beginning of an organization afterwards numbering, in the east and west, nearly 10,000. The design of the corps was to combine a body of skilled workmen in each department of railroad construction and repairs, under competent engineers, supplied with abundant materials, tools, mechanical appliances, and transportation.

They were formed into divisions, gangs, and squads, in charge respectively of supervisors, foremen, and sub-foremen, furnished with tents and field equipment. Storehouses were established at principal points, with an ample stock of tools and materials.

With the opening of the campaign in Virginia, in May, 1864, under Lieutenant General Grant, the Alexandria railroads ceased to bear any important part. The Orange and Alexandria line was open to Rappahannock river, fifty miles, between September 28 and October 2, 1864, but at once abandoned back to Manassas. It was operated to that station until November 10, when it was abandoned back to Fairfax, sixteen miles from Alexandria.

It was operated for that distance until the close of the war, and June 27, 1865, was surrendered to the board of public works of Virginia.

The Manassas Gap railroad was open from Manassas to Piedmont, thirty-four miles, between October the 3d and 11th, and operated until October 27, 1864. Between that date and November 10, the rails were taken up between the above-named stations and carried to Alexandria.

On the 9th of May, 1864, repairs were again commenced on the railroad at Aquia Creek, and it was opened to Falmouth, fourteen miles, May 17.

Potomac Creek bridge, seven miles from Aquia, four hundred and fourteen feet long, and eighty-two feet high, was built ready for trains to pass, in forty working hours.

The road was operated until May 22, principally for removing the wounded of the battles at Spottsylvania Court House. On that day it was abandoned, and not afterward used as a military line.

The Richmond and York River railroad was opened about the 1st of June from White House to Dispatch, fourteen miles, and operated until June 10, when it was finally abandoned, the track taken up by order of Lieutenant General Grant, and the materials removed to Alexandria.

Rolling stock for the Aquia Creek and York River railroads was sent from Alexandria on barges prepared with tracks for the purpose, and taken away in the same manner without loss or injury when the roads were abandoned.

Near the close of June, 1864, the City Point and Petersburg railroad was occupied to Pitkin station, eight miles from City Point.

During the fall and winter of 1864 and 1865, eighteen miles of new railroad were built, passing around to south and southwest of the city of Petersburg, by which the armies of General Grant were principally supplied.

The Richmond and Petersburg railroad was opened April 4, 1865, from Petersburg to the south bank of James river, opposite Richmond, twenty-one miles, and was operated by this department until July 3, when it was turned over to the Virginia board of public works.

The Petersburg and Lynchburg railroad was repaired between April 4th and 11th to Burkesville, sixty-two miles from City Point, and used for a short time to supply the armies of General Meade and the paroled soldiers of General Lee's army. The gauge was originally (5) five feet, but not having proper rolling stock at hand, it was changed to four feet eight and a half inches. It was operated as a military road until July 24, when it was turned over to the board of public works.

Shortly after the surrender of General Johnston's army, the Richmond and Danville railroad was opened to Danville, one hundred and forty miles, and operated for military purposes until July 4, 1865, when it, also, was surrendered to the board of public works.

The Winchester and Potomac railroad was repaired from Harper's Ferry to Halltown, six miles, between August the 14th and 19th, 1864, to Stevenson, twenty-eight miles, between November the 2d and 24th, and was used to supply the army of General Sheridan, operating in the valley of Virginia. The iron used in the reconstruction of this line was principally that taken from the Manassas Gap railroad. The bridges were all rebuilt. The road remained in charge of this department until January 20, 1866, when it was restored to the railroad company.

The railroads in Virginia, Maryland and Pennsylvania, used at any time during the war as military lines, the terminal stations on each while so used, and number of miles operated, were as follows:

Names of lines.	Terminal stations.		Length in miles.
	From—	To—	
Alexandria and Washington.....	Alexandria .....	Washington.....	7
Alexandria, Loudon, and Hampshire ....	Alexandria .....	Vienna .....	15
Orange and Alexandria .....	Alexandria .....	Mitchell's .....	68
Warrenton Branch .....	Warrenton Junction.	Warrenton .....	9
Manassas Gap .....	Manassas .....	Strasburg .....	62
Richmond, Fredericksburg, and Potomac.	Aquia Creek.....	Fredericksburg .....	15
Richmond and York River .....	White House.....	Fair Oaks.....	20
Richmond and Petersburg.....	Manchester .....	Petersburg .....	22
Clover Hill Branch.....	Clover Hill.....	Coal mines.....	18
Richmond and Danville.....	Manchester .....	Danville .....	140
South Side .....	City Point .....	Burkesville.....	62
Army Line and branches .....	Pitkin, &c.....	Humphrey, &c.....	18
Norfolk and Petersburg.....	Norfolk .....	Blackwater .....	44
Seaboard and Roanoke .....	Portsmouth .....	Suffolk .....	17
Winchester and Potomac .....	Harper's Ferry .....	Stevenson.....	28
Western Maryland .....	Baltimore .....	Westminster .....	36
Hanover Branch and Gettysburg .....	Hanover Junction ..	Gettysburg.....	30
Total miles.....	.....	.....	611



The following tabular statements exhibit—

First. The number of persons employed; the greatest number employed in any one month of each year; the average monthly number for the year, and amount paid for their services.

Second. The number of locomotive engines; how procured; number added each year, and final disposition made of them.

Third. The number of cars, &c.

Fourth. The length of bridges and track built or rebuilt.

1. *Number of persons employed and amount paid for services.*

Year ending—	Persons employed monthly.		Amount paid for services.
	Greatest number in one month.	Average number in one month.	
June 30, 1862.....	1,730	750	\$345,743 50
June 30, 1863.....	2,721	1,974	777,628 31
June 30, 1864.....	3,160	2,378	1,277,968 34
June 30, 1865.....	4,542	3,060	2,296,145 73
Nine months ending March 31, 1866.	1,360	417	162,475 07
Totals .....	4,542	1,906	4,859,960 95

2. *Locomotive engines provided, and final disposition made of them.*

Year.	Locomotives procured.				Locomotives disposed of.				
	Purchased.	Built.	Captured.	Total.	Lost or destroyed in service or in transit.	Sold.		Ret'd to former owners.	Total.
						For cash.	For south'n R. R. under Ex. Ord. Aug. 8 and Oct. 14.		
1862.....	48	1	5	54	2				2
1863.....	18			18		3			3
1864.....						9			9
1865.....						51		3	54
1866.....						4			4
Total.....	66	1	5	72	2	67		3	72

3. *Cars provided, and final disposition made of them.*

Year.	Cars procured.				Cars disposed of.				
	Purchased.	Built.	Captured.	Total.	Lost or destroyed in service or in transit.	Sold.		Ret'd to former owners.	Total.
						For cash.	To south'n R. R. under Ex. Ord. Aug. 8 and Oct. 14.		
1862.....	503		13	516	458				458
1863.....	704			704	15	10			25
1864.....	68	30		98	57	126			183
1865.....	415			415	20	958	38	13	1,026
1866.....						38			38
Total.....	1,690	30	13	1,733	550	1,132	38	13	1,733



In addition to the rolling stock belonging to the department, in cases of emergency, the railroads north of Washington were freely drawn upon for a supply, particularly in the early part of the war.

4. *The length of bridges and track built or rebuilt.*

The total length of bridges built and rebuilt upon the Virginia railroads, including those rebuilt in 1863 in Maryland and Pennsylvania, was as follows :

Trestle or temporary bridges.....	33, 336	lineal feet.
Truss or permanent bridges....	1, 595	“ “
Total.....	34, 931	“ “

or six miles and 3,251 feet.

The total length of track laid upon the same railroads was 177 miles 2,961 feet.

During the war and after its close, 128 miles 5,163 feet was taken up.

The following is a list of the principal officers of military railroads of Virginia during the war :

1862.

J. H. Devereux, superintendent railroads running from Alexandria.  
 E. L. Wentz, engineer of repairs railroads running from Alexandria.  
 J. J. Moore, engineer of repairs railroads running from Alexandria.  
 A. Anderson, engineer of repairs railroads running from Alexandria.  
 W. W. Wright, engineer and superintendent Aquia Creek railroad.  
 E. L. Wentz, engineer and superintendent Richmond and York River railroad.  
 E. L. Wentz, engineer and superintendent Norfolk railroads.

1863.

J. H. Devereux, superintendent Alexandria railroads.  
 J. J. Moore, engineer of repairs Alexandria railroads.  
 W. W. Wright, engineer and superintendent Aquia Creek railroad.  
 E. L. Wentz, engineer and superintendent Norfolk railroads.  
 A. Anderson, chief engineer military railroads of Virginia.  
 J. B. Clough, construction engineer railroads of Virginia.

1864.

E. L. Wentz, chief engineer and general superintendent military railroads of Virginia to November 1.

J. J. Moore, chief engineer and general superintendent military railroads of Virginia after November 1.

M. J. McCrickett, superintendent Alexandria railroads to October 10.

P. McCallum, superintendent Alexandria railroads after October 10.

P. McCallum, superintendent Norfolk railroads to October 10.

H. F. Woodward, superintendent Norfolk railroads after October 10.

G. M. Huntington, superintendent City Point railroads.

C. L. McAlpin, engineer of repairs City Point railroads.

J. G. Beggs, superintendent Harper's Ferry railroads, (Winchester and Potomac.)

1865.

J. J. Moore, chief engineer and general superintendent military railroads of Virginia.

P. McCallum, superintendent Alexandria railroads to March 10.

W. H. McCafferty, superintendent Alexandria railroads after March 10.

G. M. Huntington, superintendent City Point railroads.  
 C. L. McAlpine, engineer City Point railroads to May 1.  
 T. D. Hays, engineer City Point railroads after May 1.  
 H. F. Woodward, superintendent Norfolk railroads to March 1.  
 P. B. Tompkins, superintendent Norfolk railroads after March 1.  
 O. H. Darrance, superintendent Harper's Ferry railroads to April 20.  
 D. T. Shaw, superintendent Harper's Ferry railroads after April 20.  
 O. H. Dorrance, superintendent Richmond and Danville railroad.

#### MILITARY RAILROADS OF THE SOUTHWEST.

In obedience to War Department Special Order No. 562, dated December 19, 1863, paragraph 33,\* I proceeded to Tennessee and examined the condition of the railroad lines operated to supply the armies then encamped in the vicinity of Chattanooga, and submitted the following report:

CHATTANOOGA, *January 19, 1864.*

SIR: I am instructed by Major General Halleck to report the present condition of affairs connected with the United States military railroad service in the department of the Cumberland, and, in doing so, I beg to state that, while the duty is an unpleasant one, the interest of the service and my personal reputation demand a plain statement of the case:

By order of General M. C. Meigs, Quartermaster General, a large number of men were engaged and forwarded with tools and equipments to Nashville, Tennessee, there to report for duty. Having myself been ordered to report to General Meigs, at Chattanooga, I called upon Mr. J. B. Anderson, general manager, &c., Nashville, Tennessee, and informed him that I had been ordered to aid him in repairing the railroad between Bridgeport and Chattanooga.

This I at once proceeded to do. When this duty was completed, presuming that the whole force would then be put upon the whole line between Nashville and Chattanooga, it was tendered to Mr. Anderson, but for some reasons, to me unknown, he declined to adopt this course. It was, therefore, ordered by Major General Thomas, with the concurrence of Mr. Anderson, that the force be taken from the Nashville and Chattanooga lines, and put upon the repairs of the road between Chattanooga and Knoxville, Mr. Anderson taking the whole responsibility of repairs of the road in use, and to make such requisition for men and tools as might be in my power to meet.

The road between Nashville and Chattanooga is still in bad condition; and, in my opinion, no energetic means have been taken to put it in repair. The

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\* The following is the order referred to:

[Special Orders No. 562.]

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,  
*Washington, December 19, 1863.*

[Extract.]

\* \* \* \* \*

33. Colonel D. C. McCallum, additional aide-de-camp, superintendent of military railroads, will immediately proceed to Chattanooga, Tennessee, with such portion of his constructing forces as can be spared from the front, and report in person to Brigadier General Meigs, Quartermaster General United States army.

\* \* \* \* \*

By order of the Secretary of War:

E. D. TOWNSEND,  
*Assistant Adjutant General.*

A true copy:

JOHN V. FUREY,  
*Brevet Major and Assistant Quartermaster.*

iron and cross-ties on the McMinnville and Trenton branches are to be taken up and used in repairing the main lines, but, as yet, as far as my knowledge extends, no movements of that sort have been made; and although the trains are run only at the rate of eight miles per hour between Nashville and Chattanooga, accidents are frequent. In my opinion, it will be true economy to relay the whole line with new rails as soon as the latter can be procured.

I would recommend that the rolling mill, partially constructed by the rebels at this place, be completed as soon as possible, for the purpose of re-rolling the worn-out rails, coal being contiguous and abundant. This would not only be economy, but would enable the government to have rails on hand for any probable contingency. The cost of re-rolling the old iron would not be greater per ton than the expense of transporting new rails from the seaboard to this point, thus saving the original cost of the iron, besides the great advantage of having the rails on hand when and where required. It is reasonable to assume that the railroads south of this are badly worn out, which furnishes an additional argument in favor of the rolling mill. I am informed that this point will be used as an important base of supplies; this will cause a large amount of rolling stock to centre here, requiring the necessary shops and machinery for repairs. I cannot discover that measures have been taken to meet this want. The shops at Nashville are very deficient, and immediate means should be taken to increase the facilities there.

When the Northwestern railroad and the line from Chattanooga to Knoxville are completed, the following lines will be in operation :

Northwestern railroad from Nashville to the Tennessee river.....	72 miles.
Nashville to Chattanooga.....	151 miles.
Nashville to Stevenson via Decatur.....	185 miles.
Chattanooga to Knoxville.....	111 miles.
Whole distance.....	519 miles.

To work these lines, I am informed that there is on hand, or will be soon, seventy locomotives and six hundred freight cars. This supply is entirely inadequate. I may say here that on certain emergencies we have had in use between Washington and Culpeper, sixty locomotives and eight hundred cars, a distance of seventy miles. It is true this was an extreme case, but one not unlikely to occur on all military railroads. The railroad from Aquia Creek to Falmouth, distance, fourteen miles, required at times fourteen locomotives and one hundred and sixty-five cars.

The ordinary supply of rolling stock in use upon the various railroads in this country will average one locomotive and twelve freight cars to every two miles in length of road in use, and on many lines the supply is even greater. Thus, according to the above statement, the seventy locomotives will be barely sufficient to stock one hundred and forty miles, and six hundred cars sufficient only to stock one hundred miles of railroad; add to this the liability to destruction by raids, and the necessity of being prepared, if possible, for sudden and rapid movements. It is apparent that with the present equipment no advance of the army can be made, if I am correct in assuming that it must depend upon railroads for supplies. There should be on hand in this department not less than two hundred locomotives and three thousand cars, which should be added to as the army advances southward from Chattanooga.

I regret to be compelled to report the railroad organization of this department as decidedly defective, and, as far as I have been able to discover, there is a lack of well-directed energy and seeming want of ability to comprehend the magnitude of the undertaking. The experiment of supplying an army over a long line of railroad, through an enemy's country, is yet to be tested. The

most perfect organization and the best practical talent in the country will be indispensable to success.

A construction corps of at least one thousand men, under a competent head, with a full supply of tools and materials, will be as essential as the permanency of the roadway. The line should be worked in divisions of proper length; each division put in charge of an experienced officer, directly responsible to the head of the operating department, with such a system of reports by telegraph and otherwise as will at once detect delinquencies, and as will insure perfect discipline and full co-operation throughout. In conclusion, permit me to say that I have thus briefly given my views in the case, which nothing but a plain sense of duty to the War Department and the service could have induced me to do.

I am, sir, very respectfully, your obedient servant,

D. C. McCALLUM,  
*Colonel and Aide-de-Camp.*

Hon. E. M. STANTON,  
*Secretary of War.*

The following order was received on the 4th of February, 1864 : •

[ General Orders No. 3. ]

HEADQUARTERS MILITARY DIVISION OF THE MISSISSIPPI,  
*Nashville, Tenn., February 4, 1864.*

By authority of the Secretary of War, Colonel D. C. McCallum, additional aide-de-camp United States army, is hereby appointed general manager of all railways in possession of the government, or that may from time to time be taken possession of by military authority in the Departments of the Cumberland, the Ohio, the Tennessee, and of Arkansas, with all the powers and authorities conferred and duties imposed upon and vested in Jno. B. Anderson, as general manager of said railways, by Special Order of the Secretary of War, of date War Department, Louisville, Kentucky, October 19, 1863, (as modified by paragraph 4, General Orders No. 13, from these headquarters,) and will at once enter upon the discharge of the duties of general manager of railways as aforesaid.

Jno. B. Anderson is hereby relieved from duty as general manager of said railways, and from all connection with the same, and will turn over to said Colonel McCallum all property, moneys, contracts, and papers of every kind and description belonging to government, or in any wise appertaining to or concerning said railways.

By order of Major General U. S. Grant :

T. S. BOWERS,  
*Assistant Adjutant General.*

Upon assuming the duties thus imposed, I found most inadequate means to accomplish the purposes for which the railroads had been opened. The main army was at Chattanooga and in its vicinity, and all its supplies for men and food for its animals were received from Nashville, one hundred and fifty-one miles distant, over the Nashville and Chattanooga railroad. This road was necessarily the main line of supply during the subsequent campaigns from Chattanooga towards Atlanta, and from Knoxville towards southwestern Virginia, and was at this time in the worst condition. The track was laid originally on an unballasted, mud road-bed, in a very imperfect manner, with a light V rail, on wooden stringers which were badly decayed and caused almost daily accidents by spreading apart and letting the engines and cars drop between them. The total length of road in use was as follows :

Nashville to Chattanooga.....	151 miles.
Nashville (south) to Dark's mill.....	39 miles.
Stevenson to Huntsville.....	60 miles.
Chattanooga to Charleston.....	42 miles.
Total.....	<u>292 miles.</u>

Upon examination it was found there was on the above roads the following rolling stock :

United States military railroad locomotives that could be made available..	47
Locomotives borrowed from Louisville and Nashville railroad.....	3
Total.....	<u>50</u>
Disabled and in shop for repairs.....	11
Total No. of locomotives fit for service.....	<u>39</u>
United States military railroad freight cars.....	437
Cars borrowed from Louisville and Nashville railroad, about.....	100
Total.....	<u>537</u>
No. disabled.....	137
No. freight cars in running order.....	<u>400</u>

My attention was first directed to the most efficient organization of the men employed. Two distinct departments were projected : the "transportation department," embracing the operation and maintenance of all the lines in use, and the "construction corps," for the reconstruction of the railroads which might fall into our hands as the army advanced.

The following orders and instructions were issued to the principal officers in charge of these respective organizations :

[General Orders No. 1.]

OFFICE OF GENERAL MANAGER MILITARY RAILROADS U. S.

*Nashville, February 10, 1864.*

A. Anderson is hereby appointed general superintendent of transportation and maintenance of roads in use, and W. W. Wright chief engineer of construction, in the military division of the Mississippi. They will be respected accordingly.

D. C. McCALLUM,

*Colonel U. S. A., Gen'l Manager Military Railroads U. S.*

Approved :

U. S. GRANT,  
*Major General.*

OFFICE OF GENERAL MANAGER MILITARY RAILROADS U. S.,

*Nashville, Tenn., February 11, 1864.*

SIR : You are hereby appointed general superintendent of transportation on United States military railroads in the military division of the Mississippi.

Your duties will be confined to the management of transportation on all railroads in use in this military division, together with all necessary repairs of the same. You will have, with the approval of the general manager, full authority to engage the service of all persons for whose acts you are held responsible, and

will have full power to dismiss any subordinate, when in your judgment the interest of the service will be promoted thereby. You will, also, with the approval of the general manager, have authority to establish rates of compensation of all persons serving under you. You will at an early day present to the general manager, for his approval, a plan of the organization of your department. You will have authority to make requisitions for supplies upon the assistant quartermaster detailed to service on military railroads in the military division of the Mississippi. You have power to make requisitions for men and materials, or both, upon the chief engineer in charge of construction in this division, when in your opinion the emergency calls for such assistance.

As the duties of the general manager will occasionally cause his absence from this military division, you will at such times, and in order to insure prompt action, obey any order emanating from the general-in-chief of this military division, or the generals in command of the departments of the Cumberland, the Ohio, and the Tennessee, in all matters appertaining to the branch of duties in your charge.

Very respectfully, your obedient servant,

D. C. McCALLUM,

*Colonel U. S. A., Mil. Dir., and Gen'l Manager Railroads U. S.*

A. ANDERSON, Esq.

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OFFICE OF GENERAL MANAGER MILITARY RAILROADS U. S.,  
Nashville, Tenn., February 11, 1864.

SIR: You are hereby appointed chief engineer of United States military railroads in the military division of the Mississippi.

Your duties will be confined more especially to the reconstruction and opening of new lines of railroad. For this purpose you will have the entire charge of the construction corps. You will have authority, with the approval of the general manager, to engage all persons for whose acts you are held responsible, and will have full power to dismiss any person employed under you, when in your judgment the interest of the service will be promoted thereby. You will, with the approval of the general manager, have power to establish rates of compensation of your subordinates, and will at an early day report to the general manager for his approval a plan of organization of all the forces in your charge. You will have authority to make requisitions for supplies, tools, &c., upon the assistant quartermaster detailed for special duty in the military division of the Mississippi, and located at Nashville.

It will also be your duty to honor requisitions made upon you for men and materials by the general superintendent of United States military railroads in the military division of the Mississippi, for the purpose of repairs of lines in use; but you will in no case withdraw your forces for said repairs without the consent and approval of the general in command of the department where your forces may be located, or the general-in-chief of this military division.

In order to insure prompt action, you will, in the absence of the general manager, obey the orders of the general-in-chief of this military division, or the generals in command of the departments of the Cumberland, the Ohio, and the Tennessee.

Very respectfully, your obedient servant,

D. C. McCALLUM,

*Colonel U. S. A., Mil. Dir. and General Manager Railroads U. S.*

W. W. WRIGHT, Esq.

The transportation department embraced the following divisions or sub-departments:

First. Conducting transportation or managing the movements of trains.



Second. Maintenance of road and structures, or keeping the roadway, bridges, buildings, and other structures in repair, building new structures, rebuilding old ones when and where necessary.

Third. Maintenance of rolling stock, keeping in order the locomotives and cars, and managing the shops where such work was done.

For conducting transportation "each principal line was operated by a superintendent of transportation," who was held responsible for the movement of all trains and engines over it.

Subordinate to the superintendent were one or more "masters of transportation," according to distance operated, who were constantly moving over the road to see that the employes attended properly to their duties while out with their trains.

At principal stations where locomotives were changed, or kept in reserve, an "engine despatcher" was stationed to see that the locomotives were in good order for service, that they were properly repaired and cleaned when at the station; to supervise and control the engineers and firemen, and to assign the requisite crews to engines.

Maintenance of road and structures for each line was in charge of a superintendent of repairs, with the necessary supervisors, road-masters, foremen, &c.

Maintenance of rolling stock was in charge respectively of the master machinist, who managed repairs of locomotives, and the master of car repairs, under whose charge all repairs to cars were made.

The above officers were independent of each other, and reported directly to the general superintendent.

The maximum force employed at any one time in the transportation department of the military division of the Mississippi was about twelve thousand men.

The following is the organization in detail:

*General Superintendent's Office.*—General superintendent; assistant general superintendent; chief clerk.

*Officers reporting to general superintendents.*—Superintendent N. and C., N. and N. W., and N. and C. lines; superintendent N., D., and S. line; superintendent C. and A., and C. and K. lines; superintendent K. and B. line; engineer and superintendent Mem. and Chr., Miss. Cen., Mobile and O., Mem. and Little Rock lines; agent Louisville City line; chief master of transportation; general agent; engineers of maintenance and repairs; general machinist; master carpenter; superintendent of car repairs; general engine despatcher; general train despatcher; general freight agent; general fuel agent; general ticket agent; general car agent; general storekeeper; general lumber and timber inspector; surgeon in charge.

*Officers reporting to each superintendent.*—Master of transportation; train despatchers; engine despatchers; superintendent of road repairs; superintendent of repairs, bridges and buildings; station agents; freight agents; fuel agents; car agents.

*Officers reporting to general machinist.*—Master machinist, Nashville shops; master machinist, Huntsville shops; master machinist, Chattanooga shops; master machinist, Knoxville shops; master machinist, Memphis shops.

*Officers reporting to superintendent car repairs.*—Master car repairs, Nashville shops; master car repairs, Chattanooga shops; master car repairs, Knoxville shops; foreman car repairs, Johnsonville shops; foreman car repairs, Clarksville shops; foreman car repairs, Huntsville shops; foreman car repairs, Stevenson shops; foreman car repairs, Atlanta shops; foreman car repairs, Memphis shops; foreman car repairs, Little Rock shops.

*Officers reporting to general agent.*—Station agents; conductors.

*Officers reporting to engineer of repairs.*—Assistants or division engineers; supervisors; road-masters; foreman; sub-foreman; tie inspectors.

Allusion has already been made, in reviewing the Virginia railroads, to the circumstances under which the first construction corps originated.

In the present case it was found to require a much broader development than it had previously received at the east, in order to insure beyond contingency the prompt rebuilding in the shortest possible time of any length of road that might pass into our hands.

The construction corps of the military division of the Mississippi was organized in six divisions, under the general charge of the chief engineer, and at its maximum strength numbered nearly six thousand men.

To give the corps entire mobility, enable it to move independently and perform work at the same time at widely different points, each division was made a complete whole in itself, and equipped with tools, camp equipage, and field transportation, in order that the whole or any part of the same might be moved at once in any direction where ordered, and by any mode of conveyance, by rail, with teams and wagons, or on foot.

The following is the organization of one division of the construction corps, United States military railroads, as it existed in the military division of the Mississippi:

The number of divisions was increased or diminished to suit the requirements of military movements.

Each division was under the command of a division engineer, and was divided into subdivisions or sections.

Each subdivision was under the immediate command of a supervisor.

The two largest and most important subdivisions in a division were the track-layers and bridge-builders. A subdivision was composed of gangs, each under a foreman. Gangs were subdivided into squads, each under a sub-foreman.

A division completely organized was composed of the following named officers and number of men :

	No. of men.
Division engineer .....	1
Assistant engineer .....	1
Rodman .....	1
Clerk .....	1
Messengers .....	2
	6

*Subdivision No. 1.*

Supervisor of bridges and carpenter work .....	1
Clerk and time-keeper .....	1
Commissary .....	1
Quartermaster .....	1
Surgeon .....	1
Hospital steward .....	1
Foremen (one for each 50 men) .....	6
Sub-foremen (one for each 10 men) .....	30
Mechanics and laborers .....	300
Blacksmith and helper .....	2
Cooks .....	12
	356

*Subdivision No. 2.*

Supervisor of track .....	1
Clerk and time-keeper .....	1
Commissary .....	1

Quartermaster .....	1	
Surgeon .....	1	
Hospital steward .....	1	
Foremen (one for each 50 men) .....	6	
Sub-foremen (one for each 10 men) .....	30	
Mechanics and laborers .....	300	
Blacksmith and helper .....	2	
Cooks .....	12	
	<hr/>	356

*Subdivision No. 3.*

Supervisor of water stations .....	1	
Foreman .....	1	
Mechanics and laborers .....	12	
Cook .....	1	
	<hr/>	15

*Subdivision No. 4.*

Supervisor of masonry .....	1	
Foreman .....	1	
Masons and helpers .....	10	
Cook .....	1	
	<hr/>	13

*Subdivision No. 5.*

Foreman of ox brigade .....	1	
Ox drivers .....	18	
Cook .....	1	
	<hr/>	20

*Train crew.*

Conductors .....	2	
Brakemen .....	4	
Locomotive engineers .....	2	
Firemen .....	2	
Cook .....	1	
	<hr/>	11

Grand total .....	<hr/>	777
	<hr/>	

The commissaries had charge of drawing, caring for, and issuing rations.

The quartermaster had charge of tools, camp equipage, &c.

Each foreman was responsible for the tools and other government property issued to his gang.

Each supervisor reported the time made by the men in his subdivision, through his division engineer, to the chief time-keeper, who was stationed at the headquarters of the chief engineer.

The surgeons were appointed by the chief engineer, and were paid out of a private fund voluntarily contributed by the men for hospital purposes.

Sub-foremen were appointed by the foremen, subject to the approval of the division engineer. Foremen were appointed by the division engineer, subject to the approval of the chief engineer.

Division and assistant engineers were appointed by the chief engineer, subject to the approval of the general manager.

After completing the organizations of the working forces, my attention was next directed to providing an adequate supply of locomotives and cars, with the necessary shops, tools, and materials, to keep them in working order.

In my report of January 19, 1864, I had estimated the rolling stock necessary for the business anticipated on the lines that would probably be operated from Nashville, at two hundred locomotives and three thousand cars, while only forty-seven available locomotives and four hundred and thirty-seven cars were on hand. From the imperative necessity of providing the additional equipment at the earliest possible time, the following order was given by the honorable Secretary of War to the locomotive manufacturers of the country:

WAR DEPARTMENT,  
*Washington City, March 23, 1864.*

GENTLEMEN: Colonel Daniel C. McCallum, general manager of government railways in the departments of the Cumberland, of the Ohio, and of the Tennessee, has been authorized by this department to procure locomotives without delay for the railways under his charge.

In order to meet the wants of the military departments of the government, you will deliver to his order such engines as he may direct, whether building under orders for other parties or otherwise; the government being accountable to you for the same.

The urgent necessity of the government for the immediate supply of our armies operating in Tennessee renders the engines indispensable for the equipment of the lines of communication, and it is hoped that this necessity will be recognized by you as a military necessity, paramount to all other considerations.

By order of the President:

EDWIN M. STANTON,  
*Secretary of War.*

It is proper and just to state that the requisitions of this order were met by all in a spirit of zealous patriotism. The manufacturers at once placed all their available force at work upon the engines and cars ordered, which were completed and delivered in an unprecedented short time.

The following table shows the rate of delivery at Nashville of engines and cars from the manufacturers:

Months.	Locomotives received.	Cars received.	Months.	Locomotives received.	Cars received.
1864.—February .....	13	158	1864.—October .....	19	195
March .....	7	183	November .....	1	132
April .....	10	334	December .....	1	101
May .....	23	244	1865.—January .....		85
June .....	24	132	February .....		85
July .....	26	182	March .....		78
August .....	8	267	April .....		100
September .....	8	231	May .....		66
			Total .....	140	2,573

Notwithstanding the large additions made to the rolling stock in February, March, and April, it was still inadequate to supply the wants of the service, and it was necessary to use extraordinary measures to increase it.

The gauge of the Tennessee railroads being five feet, and only the roads in Kentucky having a corresponding gauge, they were the only source from which rolling stock could be obtained, and their engines and cars were temporarily impressed into the government service and sent south of Nashville.

The following number of engines and cars were thus obtained and used through May and during parts of April and June:

	Engines.	Cars.
Louisville and Nashville railroad.....	17	120
Louisville and Lexington railroad.....	2	15
Kentucky Central railroad.....	2	60
Total.....	<u>21</u>	<u>195</u>

The fifteen cars belonging to the Louisville and Lexington railroad and the sixty cars of the Kentucky Central railroad were subsequently purchased by the government.

To maintain the locomotives and cars in good working order, extensive machine and car shops were built at Nashville and Chattanooga.

These shops were supplied with machinery partly seized or purchased in the country, and partly obtained from northern manufacturers.

The shops at Nashville, particularly, were on a large scale, as at times one hundred engines and more than one thousand cars were there at once, it being the main terminal station of five hundred miles of road, running from it east, south, and west. Extensive storehouses also were built at Nashville and Chattanooga, and kept supplied with all necessary materials to rebuild or repair track, bridges, buildings, engines, or cars, to any reasonable extent.

The general intention was to make these two cities the great centres toward which all operations should converge, where supplies of all kinds could be obtained in case the roads were cut in their rear; where repairs of any kind or to any extent could be made; and in case communication was destroyed between them, operations could be conducted from either with facility in any direction.

The following tabular statement exhibits the development of these lines during the five months from February 4 to June 30:

*Statement of lines of United States military railroads, military division of the Mississippi, operated from February 4, 1864, to June 30, 1864.*

Name of line.	In use February 4, 1864.			In use June 30, 1864.			In use at any time from February 4 to June 30, 1864.		
	From—	To—	Miles.	From—	To—	Miles.	From—	To—	Miles.
Nashville and Chattanooga .....	Nashville...	Chattanooga	151	Nashville.....	Chattanooga...	151	Nashville .....	Chattanooga..	151
Shelbyville Branch .....	do.....	.....	.....	.....	.....	.....	Wartrace.....	Shelbyville...	9
McMinnville and Manchester .....	do.....	.....	.....	.....	.....	.....	Tullahoma...	McMinnville..	35
Nashville, Decatur, and Stevenson .....	do.....	Dark Mills..	39	Nashville .....	Stevenson .....	200	Nashville.....	Stevenson .....	200
Nashville, Decatur, and Stevenson .....	Stevenson ..	Huntsville..	60	.....	.....	.....	.....	.....	.....
Mt. Pleasant Branch .....	.....	.....	.....	.....	.....	.....	Columbia .....	Mt. Pleasant..	12
Nashville and Northwestern .....	.....	.....	.....	Nashville .....	Tennessee river	78	Nashville .....	Tennessee river	78
Chattanooga and Knoxville .....	Chattanooga	Charleston..	42	Chattanooga..	Knoxville .....	112	Chattanooga..	Knoxville .....	112
Knoxville and Bristol .....	.....	.....	.....	.....	.....	.....	Knoxville .....	Bull's Gap.....	56
Chattanooga and Atlanta .....	.....	.....	.....	Chattanooga..	Big Shanty...	107	Chattanooga..	Big Shanty...	107
Cleveland and Dalton .....	.....	.....	.....	Cleveland .....	Dalton .....	27	Cleveland .....	Dalton .....	27
Rome Branch .....	.....	.....	.....	Kingston .....	Rome .....	17	Kingston.....	Rome .....	17
Louisville city .....	.....	.....	.....	River Landing	L. and H. R. R. depot.	2	River Landing	L. and H. R. R. depot.	2
Total .....	.....	.....	292	.....	.....	694	.....	.....	806



Beside the lines mentioned above, the Memphis and Charleston railroad was opened from Memphis to Grand Junction, 52 miles, and the Mobile and Ohio railroad had been used from Columbus to Union City, 26 miles.

The operations in Western Tennessee and Kentucky, and in north Mississippi, were distinct and separate from those at Nashville, and although under the control of the general superintendent at the latter point, they required and received very little attention as compared with the lines leading to the front.

The Nashville and Chattanooga railroad, 151 miles, was the great main line over which passed all the supplies for the armies of the Cumberland, the Ohio, and the Tennessee, through the campaigns which terminated with the occupation of Atlanta. Over this single line of railroad the provisions, clothing, and camp equipage for the men, forage for animals, arms, amunitions, and ordnance stores, re-enforcements, and all the varied miscellaneous supplies required for a great army engaged in an active campaign, were sent to the front; and by it were returned the sick, wounded, disabled, and discharged soldiers, refugees and freedmen, captured prisoners, and materials deemed advisable to send to the rear.

Portions of the road had been in use for military purposes since April, 1862, but I have not in my possession any data of the operations of this or any other military line of the southwest prior to February, 1864.

About 115 miles of track were re-laid with new iron, cross-ties, and ballast from February, 1864, to the close of the war. Sidings were put in at intervals to be not more than eight miles apart, each capable of holding five to eight long freight trains, and telegraph stations were established at most of them. In all nineteen miles of new sidings were added to this road, and forty-five new water tanks were erected.

During the spring and summer of 1864 a few occasional guerilla raids were made upon it, but they caused little damage to property or detention to transportation. About September 1, 1864, the rebel General Wheeler destroyed seven miles of the road between Nashville and Murfreesboro'. In December, General Hood destroyed seven and three-fourth miles of track and five hundred and thirty feet of bridges between the same stations. In both cases the road was promptly repaired and trains were running in a few days.

The road was turned over to the company September 15, 1865.

The next railroad in importance for military purposes was the Western and Atlantic, from Chattanooga to Atlanta, 136 miles. It was opened to Ringgold, Georgia, 21 miles from Chattanooga, in March, 1864. Early in May the work of reconstruction was commenced south from Ringgold, and kept pace with the movements of Sherman's army. The line was opened through to Atlanta in August, 1864, immediately after the evacuation of the town by the rebel army. In the reconstruction of this road 22½ miles of track and 4,081 lineal feet of bridges were rebuilt.

The most important single structure was Chattahoochie bridge, 780 feet long and 92 feet high, which was completed by the construction corps in four and a half days. While occupied as a military road this was more infested by guerillas than any other during the war. Every device possible to apply was used to throw trains from the track, and, though occasionally successful, the preparations to guard against such attempts were so complete that few of them caused loss of life or more than a few hours' detention.

Early in October, 1864, General Hood passed around General Sherman's army, and fell upon the railroad at several points in its rear. He destroyed 35½ miles of track and 455 lineal feet of bridges, but in thirteen days after he left the line it was repaired and trains were run over its entire length.

Twenty-five miles of the track and 230 feet of bridges, in one stretch, between Tunnel Hill and Resaca were reconstructed in seven and a half days. This was accomplished by working from each end of the break, and at the same time

working both ways from Dalton, which was reached by trains with material by way of Cleveland after relaying one and a half mile of track.

When General Sherman commenced his march to Savannah, in November, the road between Atlanta and Dalton, 100 miles, was abandoned, the track from Atlanta to Etowah river, 46 miles, was torn up and destroyed, and from Resaca to Dalton, 16 miles, the rails were taken up and carried to Chattanooga.

By order of Major General Thomas the road from Dalton to Atlanta was reconstructed, and between May 10 and July 4, 1865, sixty-six miles of track were laid, 26 miles repaired, and 3,553 lineal feet of bridges rebuilt.

On the 25th day of September, 1865, it was turned over to the State of Georgia, to whom it originally belonged.

The East Tennessee and Georgia railroad from Chattanooga to Knoxville, 112 miles, was opened through in May, 1864, upon completion of Tennessee River bridge at Loudon. It had been used for three months previous by transshipping stores and passengers across the river in flat-boats. It was operated with great regularity during the entire military occupation of that region, except in August and September, 1864, when General Wheeler tore up 25 miles of track. It was speedily repaired and not molested afterward.

The Dalton branch from Cleveland to Dalton, 27 miles, was operated in connection with the main line and was of great service on several occasions. On the 28th day of August, 1865, the road and branch was restored to the company.

The East Tennessee and Virginia railroad, from Knoxville to Bristol, was used and abandoned for short distances near Knoxville during 1864. The furthest point reached during the year was Bull's Gap, 56 miles from Knoxville. By order of Major General Thomas repairs were commenced near Knoxville March 4, 1865, and the road opened to Carter's station, 110 miles, April 23. Between those dates twelve miles of track were rebuilt, ninety-four miles repaired, and 4,400 lineal feet of bridges constructed. It was turned over to the company August 28, 1865.

#### NASHVILLE, DECATUR, AND STEVENSON LINE—200 MILES.

This is formed of the Nashville and Decatur railroad, 120 miles from Nashville, south to Decatur, on Tennessee river, together with the eastern portion of the Memphis and Charleston railroad from Decatur to Stevenson, 80 miles. Stevenson is at the junction of the latter railroad and the Nashville and Chattanooga, being 113 miles distant from Nashville.

Although the distance via Decatur is 87 miles greater than by the direct road, such was the pressure for transportation it was necessary to send return trains by that route from the front, until the capacity of the Nashville and Chattanooga line was sufficiently increased to accommodate the business. In June, 1864, all through trains were transferred to the main line.

The Nashville, Decatur, and Stevenson road was used for local purposes during the summer of 1864. About the first of September General Wheeler tore up several miles of the track between Nashville and Columbia, and late in September General Forrest destroyed several bridges and tore up a portion of the track between Athens and Pulaski. The whole length of the track destroyed in the two raids was 29½ miles. That between Nashville and Columbia was at once repaired, but between Pulaski and Athens it was not rebuilt until February, 1865. During Hood's Nashville campaign, in November and December, 1864, all the bridges then standing between Nashville and Decatur were destroyed, with six miles of track. The work of reconstruction was commenced December 19, three days after the battle of Nashville, and completed to Pulaski February 10, 1865. In addition to relaying the track, 7,055 lineal feet of bridges were built, consuming 1,045,675 feet of timber, (board measure.)

Near the close of February, and again in March, most of these bridges were

swept away by extraordinary floods, and were rebuilt, some of them twice, and many of them three times; and they were finally replaced by permanent truss bridges.

The road from Stevenson to Decatur was restored to the company September 12, and between Nashville and Decatur, September 15, 1865.

NASHVILLE AND NORTHWESTERN—78 MILES.

At the beginning of the war this road had been completed to Kingston Springs, 25 miles from Nashville, and some work had been done upon it thence to Tennessee river. It remained in this condition until after the following order was issued:

[Special Order.]

WAR DEPARTMENT,  
*Louisville, Kentucky, October 22, 1863.*

Ordered:

1st. That the construction of the Northwestern railroad from Nashville to the Tennessee river, at Reynoldsburg, as a military railroad for the transportation of troops, army supplies, and for other military purposes, be placed in charge of Andrew Johnson, military governor of Tennessee, with full power to procure material, to employ a competent engineer and other officers, agents, and workmen, necessary to complete said line of railroad without delay. All officers, agents, and workmen, and contracts for materials, necessary to the construction of said road shall be under his general direction and control, subject to the approval of the Quartermaster General.

2d. Officers of the quartermaster's department shall be designated by the Quartermaster General to draw rations and provide supplies for the forces engaged upon the work, and the expenses incurred from time to time under this order, when properly certified by the engineer in charge of the work, and by Andrew Johnson, military governor of Tennessee.

3d. Chief officers of the commissary department at Nashville, will furnish such rations and supplies for the forces engaged in constructing the Northwestern railroad as may be necessary, upon requisition from the quartermaster referred to in this order.

4th. The general manager of the military railways will provide, upon the requisitions of Andrew Johnson, military governor of Tennessee, such engines and cars, (so far as it may be consistent with the transportation of army supplies,) for construction purposes as may be necessary, and also to move fuel and other supplies to Nashville for the government, and such other purposes and on such terms as may be approved by the Quartermaster General.

5th. As soon as the line is connected through between Nashville and Reynoldsburg, it shall be turned over to the general manager of government railways as a military road, and be used for military purposes in the same manner as other railroads in the possession of the government are, or may be hereafter, operated, under orders of the government as military lines.

6th. Major General Grant will furnish such military forces as may be necessary for the protection of the road and the working parties engaged thereon.

EDWIN M. STANTON,  
*Secretary of War.*

On the 17th day of February, 1864, the supervision of the work of construction was placed in my charge by order of Major General Grant. (Special Order 43, headquarters military division of the Mississippi, 1864.)

The road was connected through between Nashville and Tennessee river on the tenth day of May, 1864. \* On the 9th of August it was turned over to this department to be operated as a military line, by an order of Major General

Sherman, issued by the authority of the President of the United States. At the terminus on Tennessee river, named Johnsonville, extensive arrangements were made to receive and transfer freight from steamboats to cars. Ample buildings and platforms were erected, and powerful hoisting machinery introduced. During the months of August, September, and October, the season of low water in Cumberland river, large quantities of supplies for the army were received and shipped over the road. It was very much exposed to attacks from guerrillas, who at times inflicted considerable damage, and interfered with its operation. On the 4th of November General Forrest planted batteries on the west bank of Tennessee river, and succeeded in destroying all the valuable buildings of Johnsonville, with their contents. On the 30th of November the road was entirely abandoned, and the movable property on it taken to Nashville. During General Hood's occupation of the country, from December 1 to 16, all the bridges were destroyed. Repairs were commenced January 2, and the road completed through February 13; 2,200 lineal feet of bridges were rebuilt. In February, March, and April most of these bridges were swept away by floods, and rebuilt, some of them three times. In May and June, 1865, all were replaced by permanent truss bridges.

On the 1st of September, 1865, the road was turned over to the railroad company.

#### NASHVILLE AND CLARKSVILLE—62 MILES.

This line was formed of the Edgefield and Kentucky railroad, 47 miles from Nashville, and 15 miles of the Memphis, Clarksville, and Louisville railroad. It was repaired and opened in August, 1864, by order of Major General Sherman, in order to have another railroad communication with water navigable in summer, to aid in supplying the Nashville depot.

Important bridges were destroyed by floods at various times and rebuilt, until in April, 1865, when its use as a military road was abandoned, except on the 28 miles nearest Nashville. It was turned over to the company September 23, 1865.

After the war was closed the railroads leading south from Nashville were kept in active operation for some months, transporting paroled prisoners to their homes, and returning those who had been confined in camps north of the Ohio river, together with the movement of Union troops to be mustered out or take up new positions in Tennessee and Georgia.

#### RAILROADS IN WESTERN TENNESSEE AND KENTUCKY.

In 1862 several lines and many miles of railroad were operated for military purposes from Memphis, Tennessee, and Columbus, Kentucky, but no reports or statements of their business have been in my hands.

No part of the road was in operation from Memphis when I took charge, but during the years 1864 and 1865 the western portion of the Memphis and Charleston railroad, and a part of the Mississippi Central, were operated as follows:

February 26, 1864, opened to Germantown.....	15 miles.
March 26, 1864, abandoned back to within five miles of Memphis.	
June 11, 1864, opened to White's station.....	10 "
June 29, 1864, opened to Grand Junction.....	52 "
August 2, 1864, opened to Holly Springs.....	75 "
August 6, 1864, opened to Tallahatchie river.....	100 "
August 18, 1864, abandoned to Grand Junction.....	52 "
August 23, 1864, reopened to Tallahatchie river.....	100 "
August 24, 1864, abandoned to Grand Junction.....	52 "
September 6, 1864, abandoned to White's station.....	10 "
October 15, 1864, abandoned entirely.	

December 20, 1864, opened to Colliersville.....	24 miles.
January 1, 1865, abandoned entirely.	
February 28, 1865, opened to Germantown.....	15 "
March 4, 1865, abandoned entirely.	
March 24, 1865, opened to Colliersville.....	24 "
April 2, 1865, opened to Lafayette.....	32 "
May 13, 1865, opened to Moscow.....	39 "
May 14, 1865, opened to La Grange.....	49 "
May 20, 1865, opened to Grand Junction.....	52 "
June 30, 1865, opened to Pocahontas.....	75 "
September 12, 1865, turned over to the company.	

Each time it was abandoned it was badly damaged by the enemy; bridges, trestles, and cattle-guards were burned, and miles of track torn up.

At Columbus, Kentucky, I found the Mobile and Ohio railroad open to Union City, 26 miles. It was abandoned about the first of May, 1864, at the time of Forrest's raid upon Union City, and not afterwards used except in the immediate vicinity of Columbus, until May, 1865. It was reopened to Union City May 15, and to Crockett, 35 miles, May 31; and restored to the company August 25, 1865.

## ARKANSAS.

The Memphis and Little Rock railroad, between Duvall's Bluff and Little Rock, 49 miles, was the only line operated in this State.

It did not come under my control until May 1, 1865. It was then in very bad condition in consequence of the nature of the soil and neglect or want of skill in keeping up the necessary repairs. It was operated as a military line until November 1, 1865, when it was restored to the company.

*Statement of railroads operated in Tennessee, Georgia, Mississippi, Kentucky, and Arkansas.*

Name of line.	Number of miles operated within the following periods.					Greatest number of miles operated.	Turned over to owners.
	1864.			1865.			
	Feb. 10.	June 30.	Dec. 31.	June 30.	Dec. 31.		
Nashville and Chattanooga .....	151	151	551	151	151	151	Sept. 15, 1865.
Nashville, Decatur, and Stevenson .....	99	200	200	200	200	200	Sept. 15, 1865.
Nashville and Northwestern .....	.....	.....	78	78	78	78	Sept. 1, 1865.
Nashville and Clarksville .....	.....	.....	62	62	28	62	Sept. 23, 1865.
Shelbyville Branch .....	9	9	9	.....	.....	9	Sept. 15, 1865.
McMinnville and Manchester .....	.....	35	.....	.....	.....	35	
Mount Pleasant Branch .....	.....	12	.....	.....	.....	12	Sept. 15, 1865.
Chattanooga and Knoxville.....	42	112	112	112	112	112	Aug. 28, 1865.
Cleveland and Dalton.....	.....	27	27	27	27	27	Aug. 28, 1865.
Knoxville and Bristol .....	.....	56	17	110	110	110	Aug. 28, 1865.
Rogersville and Jefferson.....	.....	.....	.....	12	12	12	
Chattanooga and Atlanta.....	.....	107	136	136	136	136	Sept. 25, 1865.
Rome Branch .....	.....	17	17	17	17	17	
Atlanta and Macon .....	.....	.....	11	.....	.....	11	
Memphis and Charleston .....	.....	52	52	75	75	75	Sept. 12, 1865.
Mississippi Central.....	.....	.....	68	.....	.....	68	Sept. 12, 1865.
Mobile and Ohio.....	26	26	.....	35	35	35	Aug. 25, 1865.
Memphis and Little Rock .....	.....	.....	.....	49	49	49	Nov. 1, 1865.
Louisville City .....	2	2	2	2	2	2	
Total.....	329	806	942	1,066	1,032	1,201	

*United States military railroads, division of the Mississippi; embracing the roads in Tennessee, Georgia, Kentucky; Alabama, Mississippi, and Arkansas.*

In the following tabular statement are given—

1. The greatest number of persons employed in any month of the year, average monthly number, and amount paid for services.
2. The number of locomotive engines, how procured, number added each year, and final disposition made of them.
3. The number of cars, &c.
4. The length of track and bridges built or rebuilt.

*1. Number of persons employed and amount paid for services.*

Year.	Persons employed monthly.		Amount paid for services.
	Greatest number in one month.	Average number per month.	
1864 .....	16,364	11,580	\$6,316,861 45
1865 .....	17,035	10,061	6,513,384 15
Total .....	17,035	10,787	12,830,245 00

*2. Locomotive engines provided and final disposition made of them.*

Year.	Locomotives procured.			Locomotives disposed of.				
	Purchased.	Captured.	Total.	Lost or destroyed in service or in transit.	Sold.		Returned to former owners.	Total.
					For cash.	To sou't'n RR. under Exec. Orders Aug. 8 and Oct. 14.		
1862 .....	18	35	53	.....	.....	.....	.....	.....
1863 .....	20	14	34	.....	.....	.....	.....	.....
1864 .....	154	17	171	2	.....	.....	.....	2
1865 .....	2	.....	2	.....	.....	161	63	224
1866 .....	.....	.....	.....	.....	32	.....	2	34
Total .....	194	66	260	2	32	161	65	260



3. Cars provided and final disposition made of them.

	Cars procured.			Cars disposed of.				
	Purchased.	Built.	Total.	Lost or destroyed in service or in transit.	Sold.		Returned to former owners.	Total.
					For cash.	To south RR. under Exec. Orders Aug. 8 and Oct. 14.		
On hand February 1, 1864...	.....	.....	755	.....	.....	.....	.....	.....
Year ending June 30, 1864...	1,081	.....	1,081	160	.....	.....	.....	160
Year ending June 30, 1865...	1,522	25	1,547	243	.....	.....	.....	243
Year ending June 30, 1866...	.....	.....	.....	32	536	2,311	101	2,980
Total .....	2,603	25	3,383	435	536	2,311	101	3,383

4. The length of bridges and track built and rebuilt.

The length of bridges built and rebuilt was 97,544 lineal feet, or 18 $\frac{3}{4}$  miles.  
The length of main track laid was 391 $\frac{12}{100}$  miles.  
The length of sidings laid was 42 $\frac{32}{100}$  miles, making a total of 433 $\frac{44}{100}$  miles.  
The following list embraces the names of the general officers :

1864.

- A. Anderson, general superintendent to November 1.
- E. L. Wentz, general superintendent after November 1.
- W. J. Stevens, superintendent railroads running from Nashville.
- Colonel L. P. Wright, superintendent railroads from Chattanooga to July 1.
- W. C. Taylor, superintendent railroads from Chattanooga after July 1.
- A. F. Goodhue, engineer and superintendent railroads at Memphis, Tennessee, and Columbus, Kentucky.
- W. W. Wright, chief engineer of construction corps.
- L. H. Eicholtz, division engineer first division.
- E. C. Smeed, division engineer second division.
- John F. Burgin, division engineer fourth division.
- W. R. Kingsley, division engineer fifth division.
- Colonel John Clark, in charge of construction on the northern and northwestern railroads.
- William McDonald, assistant engineer.
- Charles Latimer, assistant engineer.
- John Trenbath, auditor.
- Colonel John C. Crane, assistant quartermaster, disbursing officer.
- Captain George S. Raper, commissary subsistence.

1865.

- W. J. Stevens, general superintendent.
- R. B. McPherson, assistant superintendent.
- J. B. Van Dyne, chief master of transportation.
- A. W. Dickinson, superintendent Nashville railroads to July 25.
- George H. Hudson, superintendent Nashville railroads after July 25.
- W. R. Gifford, superintendent Nashville, Decatur, and Stevenson railroads.
- A. A. Talmadge, superintendent Chattanooga railroads.
- A. J. Cheney, superintendent Knoxville and Bristol railroad to September 1.
- A. J. Cheney, superintendent Chattanooga and Atlanta railroad after September 1.

A. Hebard, engineer of repairs, Nashville railroads.

A. F. Goodhue, engineer and superintendent railroads West Tennessee, Kentucky, and Arkansas.

Colonel L. P. Wright, superintendent Memphis railroads.

W. W. Wright, chief engineer of construction corps.

L. H. Eicholtz, division engineer and acting chief engineer during the absence of chief engineer in North Carolina.

John F. Burgin, division engineer.

W. R. Kingsley, division engineer on the northern and northwestern railroads.

Charles Latimer, division engineer.

John Trenbath, auditor.

Captain F. J. Crilly, chief quartermaster and disbursing officer.

Captain George S. Raper, commissary of subsistence.

T. W. Yardley, superintendent of rolling-mill.

#### MISSOURI.

In October, 1864, orders were received to have the bridges rebuilt on the Pacific railroad of Missouri, and its southwestern branch, which had lately been destroyed by the rebels. This work required the construction of 1,600 lineal feet of truss bridges, and was completed early in April, 1865, at an expense of \$170,564 65, including the cost of replacing trestles carried away by floods, and other incidental expenses.

#### NORTH CAROLINA AND ATLANTIC COAST.

Under orders received from Major General McClellan, four locomotives and one hundred freight cars were sent to Major General Burnside at Newbern, North Carolina, in the months of June and July, 1862. On the passage two locomotives were lost with the vessel off Cape Hatteras, and two others were afterward sent to replace them. One engine proving unserviceable, was subsequently returned to Alexandria, Virginia, leaving three locomotives and one hundred cars for service. The road was worked under orders and by officers appointed by the general commanding the department, and did not come under my jurisdiction. I am therefore unable to give any account of its operation.

When it was ascertained to what point of the coast General Sherman was directing his march from Atlanta, preparation was at once made to furnish him with railroad facilities. A portion of the construction corps from the division of the Mississippi, that had rebuilt the railroads during the Atlanta campaign, were ordered in December, 1864, to proceed to Baltimore by railroad from Nashville and embark for Savannah. Upon reaching Hilton Head, information was received that General Sherman would not use the railroads near Savannah, and orders were given to proceed to Newbern, North Carolina, and open the railroad to Goldsboro'. Eleven miles of the Savannah and Gulf railroad were opened and operated with rolling stock captured at Savannah for local military purposes, and to supply the citizens of the town with fuel. The tracks and buildings of the Georgia Central railroad within the city limits also were used. Five serviceable and nine unserviceable locomotives, and two hundred and thirteen cars, about one-half of them damaged and unfit for service, were captured at Savannah.

On the 20th day of June, 1865, all the railroad property was restored to the original owners by order of the department commander.

A detachment of the Virginia construction corps was sent to North Carolina by order of General Grant, and landed at Newbern January 30, 1865. The railroad at that time was in charge of the depot quartermaster at Newbern, and was in operation between Morehead City and Batchelor's Creek, forty-four miles. This construction force at once commenced rebuilding the bridge over that stream. On the 6th day of February the detachment sent from the military

division of the Mississippi landed at Morehead City and relieved the force from Virginia, which returned to City Point.

The railroad was repaired as fast as the army advanced, and was opened to Goldsboro'; ninety-five miles, March 25, the day following the arrival of General Sherman and his army from Savannah.

To provide another line of supplies the railroad from Wilmington to Goldsboro', eighty-five miles, was repaired and opened through April 4.

On the 10th of April movements were resumed toward the interior, and the railroad was opened April 19 to Raleigh, forty-eight miles from Goldsboro'. It was opened soon after to Hillsboro', and used until the parole of General Johnston's army was completed, when it was given up west of Raleigh.

The total length of railroads opened and used in this department was as follows :

Name of line.	Terminal stations.		Length in miles.	Transferred to company.
	From—	To—		
Atlantic and North Carolina.....	Morehead City	Goldsboro'....	95	October 25, 1865.
Wilmington and Weldon.....	Wilmington..	Goldsboro'....	85	August 27, 1865.
North Carolina.....	Goldsboro' ...	Hillsboro'....	88	October 22, 1865.
Raleigh and Gaston.....	Raleigh.....	Cedar creek..	25	May 3, 1865.
Total miles .....			293	

On these roads, 25 miles 2,172 feet of main track was rebuilt, and 5 miles 1,460 feet side-track was laid, or 30 miles 4,632 feet of track in all.

On the same roads 3,263 lineal feet of bridges were built, consuming 825,750 feet of timber, board measure. At Morehead City a wharf was built by the construction corps covering an area of 53,682 square feet, and consuming 700,000 feet of timber, board measure.

In the following tabular statements are embraced the principal items of information in regard to these lines :

1. *Number of persons employed in the year 1865.*

Greatest number employed monthly,..... 3, 387

2. *Locomotive engines provided, and final disposition made of them.*

Year.	Locomotives procured.			Locomotives disposed of.				
	Purchased.	Captured.	Total.	Lost or destroyed in service or in transit.	Sold.		Returned to former owners.	Total.
					For cash.	To sout'n RR. under Exec. Orders Aug. 8 and Oct. 14.		
1862.....	5		5	2				2
1863.....	2		2					
1864.....								
1865.....	10	21	31		9	3	21	33
1866.....					3			3
Total.....	17	21	38	2	12	3	21	38

3. Cars provided and final disposition made of them.

Year.	Cars procured.			Cars disposed of.				
	Purchased.	Captured.	Total.	Lost or destroyed in service or in transit.	Sold.		Returned to former owners.	Total.
					For cash.	To south RR. under Exec. Orders Aug. 8 and Oct. 14.		
1862.....	100	3	103	20	.....	.....	.....	23
1863.....	.....	.....	.....	38	.....	.....	.....	38
1864.....	.....	.....	.....	.....	.....	.....	.....	.....
1865.....	139	180	319	1	.....	101	183	285
1866.....	.....	.....	.....	.....	79	.....	.....	79
Total.....	239	183	422	59	79	101	183	422

The following officers were directly in charge of operating the military railroads in North Carolina :

W. W. Wright, chief engineer and general superintendent to July 1 ; Col. J. F. Boyd, chief engineer and general superintendent after July 1 ; J. B. Van Dyne, superintendent ; E. C. Smeed, engineer of repairs.

RAILS AND ROLLING-MILL.

The greatest necessity next to that of rolling stock was a supply of rails. These were obtained by purchase, manufacture, and by taking up lines unnecessary for military purposes.

The following roads were thus taken up entire for the distance specified :

Railroad.	From—	To—	Length.	
			Miles.	Feet.
Seaboard and Roanoke.....	Suffolk.....	Blackwater.....	14	.....
Norfolk and Petersburg.....	Suffolk.....	Blackwater.....	14	.....
Manassas Gap.....	Manassas.....	Piedmont.....	35	.....
Richmond and York River.....	White House.....	Chicahominy river.	13	.....
Winchester and Fayetteville.....	Deckerd.....	Fayetteville.....	41	2,640
McMinnville and Manchester.....	Near Manchester..	McMinnville.....	26	2,760
Mount Pleasant Branch.....	Columbia.....	Mount Pleasant ..	12	2,165

During the war the quantity of rails purchased and manufactured was as follows :

Year.	Quantity of rails.			
	No. of tons purchased.		Manufactured at Chattanooga rolling mill.	
	Tons.	Pounds.	Tons.	Pounds.
1862.....	6, 086	1, 723	.....	.....
1863.....	6, 030	1, 790	.....	.....
1864.....	8, 165	1, 446	.....	.....
1865.....	1, 500	1, 352	3, 818	1, 184
Total.....	21, 783	831	3, 818	1, 184

The prices paid for purchased rail varied from \$40 per ton (the lowest price paid) in July, 1862, to \$130 per ton (the highest price paid) in June, 1864. Soon after taking charge of the railroads in the military division of the Mississippi, the following communication was addressed to the commanding general :

OFFICE OF GENERAL MANAGER OF THE MILITARY  
RAILROADS OF THE UNITED STATES,  
*Nashville, Tennessee, February 17, 1864.*

GENERAL : When the track of the Nashville and Chattanooga railroad is re-laid, we will have on hand three hundred and two miles of old rails, weighing eleven thousand eight hundred and sixty-four (11,864) gross tons. At present rates, new rails delivered at Chattanooga will cost one hundred and forty-five dollars (\$145) per ton. There is at Chattanooga a rolling-mill partially built by the rebels, which, if completed, say at a cost of thirty thousand dollars, (\$30,000,) these old rails can be re-rolled at a cost of about fifty dollars (\$50) per ton, coal being contiguous and abundant. This would not only be a large saving to the government, but what, in my opinion, is of greater importance, the rails would be on hand ready for use when and where required.

The following represents the case :

11,864 tons of new rails delivered at Chattanooga, at \$145 per ton ..	\$1, 719, 250
11,864 tons of old rails re-rolled, at a cost of \$50 per ton	\$593, 200
Cost of mill estimated at.....	30, 000
	<u>623, 200</u>
In favor of rolling mill.....	<u><u>1, 096, 050</u></u>

By advice recently received, the stock of railroad iron in the market is small and the demand large. In fact, should an emergency arise requiring a large amount of iron, it is doubtful whether it could be had at any price.

I therefore respectfully ask, unless military reasons forbid, your permission to complete the rolling-mill at Chattanooga.

I have the honor to be, very respectfully, your obedient servant,  
D. C. McCALLUM,  
*Colonel U. S. A., General Manager Military Railroads U. S.*  
Major General U. S. GRANT,  
Comd'g Mil. Div. of the Mississippi, Nashville, Tenn.

The following order was the response to this letter :

[Special Order No. 48.]

HEADQUARTERS MILITARY DIVISION OF THE MISSISSIPPI,  
Nashville, Tennessee, February 17, 1864.

Colonel D. C. McCallum, general manager of military railroads within this military division, is hereby directed to proceed at once to complete and set at work the rolling-mill at Chattanooga, Tennessee.

By order of Major General Grant :

T. S. BOWERS,  
Assistant Adjutant General.

Upon a more extended and thorough examination it was found that many important parts of the machinery provided by the rebels for the rolling-mill were not at hand. They were, in fact, still within their lines, and no probability existed of obtaining them uninjured within any reasonable time, if at all; therefore it was decided to build entirely new machinery throughout, and to make it of the most improved pattern used in rolling-mills of the north.

The mill building, partially completed by the rebels, was declared by the military authorities too far from the fortifications at Chattanooga to be safe, and after careful investigation of the question, the building was abandoned and a new one erected in a secure location. To reach the site selected, and properly accommodate the mill, required building one and two-thirds mile of railroad.

Thus, instead of completing a partially built work, an entirely new and a very superior rolling-mill, in point of machinery, was the result.

The total cost of the mill, complete and ready for work, was as follows :

Rolling-mill building.....	\$125,857 81
Machinery, including transportation.....	120,000 00
Quarters for workmen, officers, and other buildings.....	21,212 00
Railroad to mill—material and labor.....	23,259 70
Total cost.....	<u>290,329 51</u>

The mill, with its outbuildings and railroad, were built by the construction corps; most of the timber used was got out by them, and nearly all the work was done at times when there was a lull in active operations in the field. As this force was necessarily kept on hand for emergencies, and their legitimate place was at the front, the work done by them in building the mill may be regarded as almost clear gain to the government. More than \$100,000 of the above sum was paid for labor thus expended.

Owing to the great pressure upon the manufacturers of machinery, the scarcity of labor, difficulty of obtaining proper materials, and of procuring transportation to Nashville on the over-crowded railroad lines of the north, the mill did not go into operation until April 1, 1865.

It was employed in manufacturiug rails for the United States until October 5, 1865, when it was sold to the highest bidder, after two months' advertisement, for \$175,000.

It was in operation six months and five days, and in that time manufactured 3,818 tons and 1,184 pounds of new rails, at a cost of—

For coal, 145,897 bushels.....	\$36,474 25
For labor.....	98,776 39
Total.....	<u>135,250 64</u>

Average cost per ton, \$35 42.



These were disposed of as follows :

	Tons.	Pounds.
To repair tracks.....	466	2, 066
Sold to southern railroads.....	3, 351	1, 358
Total.....	3, 818	1, 184

The quantity sold realized in cash the sum of \$269,128 58.

ROLLING STOCK.

In the preceding statements an account is given of the quantity of rolling stock provided for each department, and the final disposition made of it. Those statements embraced only the number in active service in each case.

In the fall and winter of 1864 an additional supply was provided, in view of probable wants for the spring campaign of 1865, but the close of the war rendered it unnecessary, and it was subsequently sold at the points where manufactured or where it had been stored to await events.

Thirty-five (35) locomotives and four hundred and ninety-two (492) cars, of five feet gauge, were built for the military division of the Mississippi and North Carolina. Fifty (50) cars, of 4 feet 8½ inches gauge, also were provided for Virginia and North Carolina.

Ten (10) platform cars, of 4 feet 8½ inches gauge, had been purchased at an early day and used on the railroads of the western States to transport cars of the five feet gauge from the manufacturer's works to Jeffersonville, opposite Louisville.

Locomotives, 5-feet gauge, provided but not used.....	35
Cars, 5-feet gauge, for military division Mississippi and North Carolina..	519
Cars, 4 feet 8½ inches gauge, for Virginia and North Carolina.....	50
Cars, 4 feet 8½ inches gauge, for car transportation....	10
Total.....	579

Of these engines and cars, one of the ten cars was destroyed in service, and all the rest were sold for cash.

The following tabular statements exhibit the entire rolling stock of the military railroads during the war :

Locomotives.

Year delivered.	How obtained.			How disposed of.				
	Purchased and built.	Captured.	Total.	Lost or destroyed.	Sold.		Returned to former owners.	Total.
					For cash.	Under Ex. Orders Aug. 8 & Oct. 14.		
1862.....	73	40	113	4				4
1863.....	40	14	54		3			3
1864.....	154	17	171	2	9			11
1865.....	47	35	82		95	164	101	360
1866.....					39		2	41
Total.....	312	106	419	6	146	164	103	419

*Cars.*

Fiscal year.	How obtained.					How disposed of.				
	Purchased.	Built.	Captured.	On hand in mil'y divis'n Misc. Feb. 1, 1864.	Total.	Lost or destroyed.	Returned to former owners.	Sold.		Total.
								Under Orders Aug. 6 & Oct. 13.	Ex. For cash.	
1862.....	603	.....	16	.....	619	478	.....	.....	.....	478
1863.....	704	.....	.....	.....	704	53	.....	.....	10	63
1864.....	1, 149	30	.....	755	1, 934	217	.....	.....	126	343
1865.....	2, 655	25	393	.....	3, 073	265	213	.....	.....	478
1866.....	.....	.....	.....	.....	.....	32	297	2, 589	2, 050	4, 968
Total .....	5, 111	55	409	755	6, 330	1, 045	510	2, 589	2, 186	6, 330

The cars sold in the years 1863 and 1864 were damaged, disabled, and unfit for service.

In the above tables the rolling stock borrowed and impressed into service from the northern railroads is not included.

In the general office of military railroads in Washington have been the following officers :

W. H. Whiton, in charge April 1, 1862, to July 1, 1865.

H. K. Cooper, in charge after July 1, 1865.

J. A. Lawrence, accountant to October 10, 1863.

E. J. Kellogg, accountant after October 10, 1863.

Captain (now Brevet Brigadier General) H. L. Robinson, assistant quartermaster, has acted as disbursing and purchasing officer for the railroads in the east during the entire war.

## GENERAL REMARKS.

With few exceptions, the operations of military railroads have been conducted under orders issued by the Secretary of War, or by army commandants in or out of the field.

It was made the duty of the director and general manager to arrange the military railroad organization upon a basis sufficiently comprehensive to permit the extension of the system indefinitely, to perfect the *modus operandi* for working the various lines, to determine as to the number of men to be employed in the several departments, and the compensation to be paid therefor, the amount and kind of machinery to be purchased, and the direction as to the distribution of the same.

The following important order of the Secretary of War, the wisdom of which has been so abundantly vindicated by experience, is here inserted as defining in part the position of the military railroad organization, which seems not to have been clearly understood by many in and out of the service :

[Special Order No. 337.]

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,  
Washington, November 10, 1862.

[Extract.]

16. Commanding officers of troops along the United States military railroads will give all facilities to the officers of the roads and the quartermasters for unloading cars so as to prevent any delay. On arrival at depots, whether in the day or night, the cars will be instantly unloaded; and working parties will always be in readiness for that duty, and sufficient to unload the whole train at once.

Commanding officers will be charged with guarding the tracks, sidings, wood, water-tanks, &c., within their several commands, and will be held responsible for the result.

Any military officers who shall neglect his duty in this respect will be reported by the quartermasters and officers of the railroad, and his name will be stricken from the rolls of the army. Depots will be established at suitable points, under the direction of the commanding general, and properly guarded. No officer, whatever may be his rank, will interfere with the running of the cars as directed by the superintendent of the road. Any one who so interferes will be dismissed from the service for disobedience of orders.

By order of the Secretary of War:

E. D. TOWNSEND,

*Assistant Adjutant General.*

The above order was given in consequence of several attempts having been made to operate railroads by army or department commanders, which had, without an exception, proved signal failures, disorganizing in tendency, and destructive of all discipline. The great benefit resulting from this order was more especially exhibited during General Sherman's campaign from Chattanooga to Atlanta, and in this, my final report, I desire to put on record, for the benefit of those who may be called upon to conduct military railroad operations in the future, the following:

Having had a somewhat extensive railroad experience, both before and since the rebellion, I consider this order of the Secretary of War to have been the very foundation of success. Without it the whole railroad system, which has proved an important element in conducting military movements, would have been not only a costly but ludicrous failure. The fact should be understood that the management of railroads is just as much a distinct profession as is that of the art of war, and should be so regarded.

The difficulty of procuring a sufficient force of competent railroad men, both in the construction and transportation departments, was almost insurmountable. Owing to the peculiar nature of the service, and the rapid expansion of railroad system, the supply of railroad operatives in the country has always been limited; many had entered the army in various positions, thus diminishing the actual number in civil life, while the stimulus imparted by the war to the business of northern railroads had greatly enhanced the value of the services of those who remained at their posts, thus rendering the home demand for skilful labor far in advance of the supply. When the large number of men necessary to equip these military lines were sought for, it was extremely difficult to induce those who were really valuable to leave secure positions and enter upon a new and untried field of action.

The difference between civil and military railroad service is marked and decided. Not only were the men continually exposed to great danger from the regular forces of the enemy, guerillas, scouting parties, &c., but, owing to the circumstances under which military railroads must be constructed and operated, what are considered the ordinary risks upon civil railroads are vastly increased on military lines. The hardships, exposure, and perils to which train-men especially were subjected during the movements incident to an active campaign, were much greater than that endured by any other class of civil employes of the government, equalled only by that of the soldier while engaged in a raid into the enemy's country. It was by no means unusual for men to be out with their trains, from five to ten days, without sleep, except what could be snatched upon their engines and cars while the same were standing to be loaded or unloaded, with but scanty food, or perhaps no food at all for days together, while continually occupied in a manner to keep every faculty strained to its utmost. Many incidents during the war, but more especially during the Atlanta cam-

paign, exhibited a fortitude, endurance, and self-devotion on the part of these men not exceeded in any branch of the service. All were thoroughly imbued with the fact that upon the success of railroad operations in forwarding supplies to the front depended in great part the success of our armies; that, although defeat might be the result even if supplies were abundantly furnished, it was evident there could be no advance without; and I hazard nothing in saying, that should failure have taken place, either in keeping the lines in repair or in operating them, General Sherman's campaign, instead of proving, as it did, a great success, would have resulted in disaster and defeat; and the greater the army to supply, the more precarious its position. Since the end of the rebellion I have been informed by railroad officers who were in the service of the enemy during the war, "that they were less surprised at the success of General Sherman, in a military point of view, than they were at the rapidity with which railroad breaks were repaired, and the regularity with which trains were moved to the front;" and it was only when the method of operating was fully explained that it could be comprehended.

In the beginning of the war military railroads were an experiment; and although some light as to their management had been gleaned by the operations of 1862 and 1863, yet so little progress had been made that the attempt to supply the army of General Sherman in the field, construct and reconstruct the railroad in its rear, and keep pace with its march, was regarded by those who had the largest experience, and who had become most familiar with the subject, as the greatest experiment of all. The attempt to furnish an army of one hundred thousand (100,000) men and sixty thousand (60,000) animals with supplies from a base three hundred and sixty (360) miles distant by one line of single-track railroad, located almost the entire distance through the country of an active and most vindictive enemy, is without precedent in the history of warfare, and, to make it successful, required an enormous outlay for labor and a vast consumption of material, together with all the forethought, energy, patience, and watchfulness of which men are capable.

This line, from the fact of its great length, was imperfectly guarded, as troops could not be spared from the front for that purpose. This rendered the railroad service one of great risk and hazard, and at times it was only by the force of military authority that men could be held to service. As an item showing the real danger attending military railroad operations, it may be stated that during the last six months of the fiscal year ending June 30, 1865, the wrecking train picked up and carried to Nashville sixteen (16) wrecked locomotives and two hundred and ninety-four (294) car loads of car wheels, bridge iron, &c. These wrecks were caused by guerillas and rebel raids.

The Chattanooga and Atlanta, or Western and Atlantic, railroad extends from Chattanooga to Atlanta, one hundred and thirty-eight miles, with a branch from Kingston to Rome seventeen miles long. The reconstruction and maintenance of this line was, in many respects, the most difficult of any military railroad operations during the war. By it the confederate army, under General Johnston, made its retreat from Buzzard's Roost to Atlanta, and in falling back from one strong position to another, it did such damage to the road as was supposed would delay or prevent Sherman's pursuit; but in this it was unsuccessful. However great the damage done, it was so speedily repaired that General Sherman soon ceased to fear any delay from this cause, and made his advance movements with perfect confidence that the railroad in his rear would be "all right."

Being, from the nature of the case, entirely ignorant of the obstacles to be encountered at each advance, the construction force was at all times prepared for any emergency, either to build bridges of formidable dimensions, or lay miles of track, or, perhaps, push back to some point on the line and repair damages done by guerillas or raiding parties. These attacks on the line to the rear were

of such frequent occurrence, and often of so serious a character, that, to insure speedy repairs, it became necessary to station detachments of the construction corps at various points along the road, and also to collect supplies of construction materials, such as iron rails, chairs, spikes, cross-ties, and bridge timber at points where they would be comparatively safe and easily obtained when required. These precautionary measures proved to be of the utmost importance in keeping the road open. ●

The detachments stationed along the line were composed of bridge-builders and track-layers, with an ample supply of tools for all kinds of work. Each detachment was under the command of a competent engineer or supervisor, who had orders to move in either direction, within certain limits, as soon as a break occurred, and make the necessary repairs without delay, working day and night when necessary. Under this arrangement small breaks were repaired at once at any point on the line, even when the telegraph wires were cut, and special orders could not be communicated to the working parties.

When "big breaks" occurred, one or more divisions of the construction corps were moved as rapidly as possible thereto, either from Chattanooga or the front. Construction trains, loaded with the requisite tools and materials, were kept ready at each end of the road to move at a moment's notice.

Guerillas and raiding parties were more or less successful in destroying portions of the track during the whole time we held this line, but the crowning effort was made by the enemy in October, 1864, when Hood, getting to Sherman's rear, threw his whole army on the road, first at Big Shanty, and afterwards north of Resaca, and destroyed, in the aggregate, 35½ miles of track and 455 lineal feet of bridges, killing and capturing a large number of our men.

Fortunately, however, the detachments of the construction corps which escaped were so distributed that, even before Hood had left the road, two strong working parties were at work, one on each end of the break at Big Shanty, and this gap of ten miles was closed and the force ready to move to the great break of 25 miles in length, north of Resaca, as soon as the enemy had left it. The destruction by Hood's army of our depot of supplies compelled us to cut nearly all the cross-ties required to relay this track, and to send to a distance for rails. The cross-ties were cut near the line of the road, and many of them carried by hand to the track, as the teams to be furnished for hauling them did not get to the work until it was nearly completed. The rails used on the southern end of the break had to be taken up and brought from the railroads south of Atlanta, and those for the northern end were mostly brought from Nashville, nearly 200 miles distant.

Notwithstanding all the disadvantages under which the labor was performed, this 25 miles of track was laid and the trains were running over it in 7½ days from the time the work was commenced.

The economy so commendable and essential upon civil railroads was compelled to give way to the lavish expenditure of war, and the question to be answered was not, "How much will it cost?" but rather, "Can it be done at all at any cost?"

During February, 1862, I received the following important verbal order from the Secretary of War: "I shall expect you to have on hand at all times the necessary men and materials to enable you to comply promptly with any order given; nor must there be any failure."

The greatest number of men employed at the same date during the war was:

In Virginia.....	4,542
In North Carolina.....	3,387
In military division of the Mississippi.....	17,035
Total.....	<u>24,964</u>

The total number of miles operated :

In Virginia.....	611
In North Carolina.....	293
In military division Mississippi.....	1,201
Total.....	<u>2,105</u>

The number of engines :

In Virginia.....	72
In North Carolina.....	38
In military division Mississippi.....	260
In Georgia.....	14
Provided, but not used.....	35
Total.....	<u>419</u>

The number of cars :

In Virginia.....	1,733
In North Carolina.....	422
In military division Mississippi.....	3,383
In Georgia.....	213
Provided, but not used.....	579
Total.....	<u>6,330</u>

Length of bridges built or rebuilt :

In Virginia.....	34.931
In North Carolina.....	3,263
In Missouri.....	1,680
In military division Mississippi.....	97,544
Total.....	<u>137,418 feet, or 26 miles and 138 feet.</u>

Length of track laid or relaid :

In Virginia.....	177 miles 2,961 feet.
In North Carolina.....	30 miles 4,632 feet.
In military division Mississippi.....	433 miles 2,323 feet.
Total.....	<u>641 miles 4,636 feet.</u>

The following statement exhibits the amount expended during the war in constructing and operating the United States military railroads, said sum having been furnished from the appropriation made for the expenditures of the quartermasters' department :

VIRGINIA.

For labor.....	\$5, 227, 145 24
For materials.....	4, 920, 317 27
Total.....	<u>\$10, 147, 462 51</u>

NORTH CAROLINA.

For labor.....	\$1, 086, 224 60
For materials.....	1, 510, 435 45
Total.....	<u>2, 596, 660 05</u>



## MILITARY DIVISION OF THE MISSISSIPPI.

For labor.....	\$16, 792, 193 05
For materials.....	12, 870, 588 06
Total.....	\$29, 662, 781 11

## DEPARTMENT OF THE GULF.

For materials.....	55, 238 88
Total.....	42, 462, 142 55

Property sold under Executive order of August 8, 1865.....	\$7, 428, 204 96
Property sold for cash.....	3, 466, 739 33
Receipts from passengers and freight....	1, 525, 493 04
Receipts from hire of rolling stock .....	103, 528 50
Property on hand (estimated) .....	100, 000 00
	12, 623, 965 83
Net expenditures .....	29, 838, 176 72

The United States military railroads were transferred by Executive order of August 8, 1865, to the original owners.

The military railroad organization was designed to be a great construction and transportation machine for carrying out the objects of the commanding generals, so far as it was adapted to the purpose, and it was managed solely with a view to efficiency in that direction. It was the duty of the quartermaster's department to load all material upon the cars, to direct where such material should be taken, and to whom delivered. It then became the province of the railroad department to comply with said order in the shortest practicable time, and to perfect such arrangements as would enable it to keep the lines in repair under any and all circumstances. It was impossible for this department to keep an accurate account of the persons and material transported, as whole corps, and even armies, with all their artillery and equipments, were moved upon verbal orders from commanders sometimes hundreds of miles, and frequently in face of the enemy. As an illustration, one of the largest movements of this character was that of the 4th army corps, in 1865, from Carter's Station, in East Tennessee, to Nashville, three hundred and seventy-three (373) miles, and which employed one thousand four hundred and ninety-eight (1,498) cars.

Accompanying this report is a map showing the different lines operated in the United States by the military railroad department during the war.

In conclusion, permit me to say that the government was peculiarly fortunate in securing the services of civilian officers of great nerve, honesty, and capability, to whom the whole country owes a debt of gratitude. Among them, I take the liberty of naming as principal assistants: A. Anderson, chief superintendent and engineer; Colonel W. W. Wright, chief engineer of the military division of the Mississippi, and chief engineer and general superintendent in the department of North Carolina; J. J. Moore, general superintendent and chief engineer of railroads in Virginia; E. L. Wentz, general superintendent and chief engineer of railroads in Virginia, and afterwards, for a time, general superintendent of railroads in the division of the Mississippi; W. J. Stevens, general superintendent United States military railroads division of the Mississippi; L. H. Eicholtz, acting chief engineer military division of the Mississippi during the absence of Colonel W. W. Wright in North Carolina; A. F. Goodhue, engineer and superintendent military railroads, West Tennessee and Arkansas. Also the following commissioned officers: Brevet Brigadier General H. L. Robinson, assistant

quartermaster, Washington, D. C.; Brevet Major F. J. Crilly, assistant quartermaster, Nashville, Tennessee, and Captain G. S. Roper, commissary of subsistence, Nashville, Tennessee.

I have the honor to be, very respectfully, your obedient servant,

D. C. McCALLUM,

*Brevet Brigadier General, Director and General Manager  
United States Military Railroads.*

Brevet Major General M. C. MEIGS,

*Quartermaster General U. S. Army, Washington, D. C.*

A true copy :

JOHN V. FUREY,

*Brevet Major, Assistant Quartermaster.*

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No. 8.

#### UNITED STATES MILITARY TELEGRAPHS.

HEADQUARTERS UNITED STATES MILITARY TELEGRAPHS,  
*Cleveland, Ohio, August 31, 1866.*

GENERAL: Agreeably to your General Order No. 49, Washington, D. C., June 15, 1866, I have the honor to submit my annual report of the operations of the United States military telegraph during the fiscal year ending June 30, 1866.

I have the honor to transmit herewith the reports of as many of the officers serving with me in this branch of the public service, detailing operations of the military telegraph within their respective departments, as have been received by me up to this date.

The report of Brevet Lieutenant Colonel W. L. Gross, assistant quartermaster and assistant superintendent, is marked A; that of Brevet Lieutenant Colonel R. C. Clowry, assistant quartermaster and assistant superintendent, B; Brevet Lieutenant Colonel S. G. Lynch, assistant superintendent, C. I have not yet received the reports due from the following officers, viz: Brevet Brigadier General Thomas T. Eckert, Brevet Lieutenant Colonel J. C. Van Duzer, Brevet Lieutenant Colonel J. R. Gilmore.

My report for the fiscal year 1865 was forwarded to your department September 15, 1865, accompanied by the reports of the several officers then on duty in this service, and acting under my immediate orders.

During the past year I have continued to be stationed at Cleveland, Ohio, as chief of United States military telegraphs, issuing from time to time, to the officers serving under me, such directions and orders for the guidance and maintenance of the military telegraph as the operations of the same within the several departments demanded, or the exigencies of the military situation required.

The decisive and glorious result of the brilliant campaign of General U. S. Grant before the city of Richmond, and the crushing blow the rebellion received by the gallant and remarkable march of Lieutenant General W. T. Sherman, from Atlanta to the seaside, enabled the government to immediately commence a retrenchment of expenditures incident to military operations in nearly all branches of the public service. The military telegraph, however, was an exception, to a great extent, to the immediate application of this principle, so desirable to all, and important to the public welfare. That the rebellion had received its death-blow was undeniable, but the important and momentous question of the restoration of the rebellious States was yet to be considered and decided upon. All commercial lines of telegraph within the southern States that had been usurped by, and in the possession of, the rebel authorities, were taken possession of by the United States in the latter part of the fiscal year 1865. So long as these States continued under United States military control, and until their civil governments had been restored to a certain extent, the lines of telegraph throughout

such States remained, by order of the Secretary of War, under the direction and control of the officers of the United States military telegraph.

On the first day of December, 1865, by direction of the Secretary of War, the commercial telegraph lines above referred to were restored, with wise restrictions, to the telegraph companies claiming and establishing ownership thereto. It was thought expedient, however, to retain, in certain localities, expert telegraphers as cipherers, through whom the government would at all times have a reliable, rapid, and confidential medium of communication with its officers and authorized agents.

By order of the Quartermaster General, under date of February 27, 1866, all United States military telegraph lines and appurtenances within the States south of the Ohio river were turned over to the several commercial telegraph companies owning the "telegraph patent right" within such territory. This was in consideration of the relinquishment by the telegraph companies "of all claims against the United States for the use of their patent, for the use of their lines preceding their final restoration, and for all losses sustained by said companies by the exclusion of commercial business from those portions of their lines which have been in possession of the United States."

Under the provisions of the order of the Quartermaster General, above alluded to, such United States military telegraph lines as were in operation north of the Ohio river were sold from time to time to the commercial telegraph companies owning lines in the States in which the military telegraph lines were constructed, and the proceeds arising from said sales properly accounted for by the officers under whose direction the property was disposed of.

In further obedience to the order of the Quartermaster General, previously referred to, as soon as the military telegraph lines under charge of the several officers had been disposed of, the officers turned over to the quartermaster's department all other public property then remaining in their hands, and reported to the Quartermaster General the complete execution of his order. The Quartermaster General had no further duties to assign to the officers thus reporting. An order issued by the Secretary of War, under date of Washington, D. C., May 28, 1866, honorably mustered out of the service the following officers, taking effect upon the date following each name respectively :

Brevet Lieutenant Colonel R. C. Clowry, captain, assistant quartermaster, May 31, 1866; Brevet Lieutenant Colonel S. G. Lynch, captain, assistant quartermaster, May 31, 1866; Brevet Lieutenant Colonel W. L. Gross, captain, assistant quartermaster, June 5, 1866; Brevet Lieutenant Colonel J. C. Van Duzer, captain, assistant quartermaster, June 5, 1866; Brevet Lieutenant Colonel J. R. Gilmore, captain, assistant quartermaster, June 5, 1866; Captain L. Whitney, assistant quartermaster, May 31, 1866.

At the close of the fiscal year 1866 the only officers remaining in the United States service connected with military telegraphs were the chief of this corps, on duty at these headquarters, and Brevet Brigadier General Thomas T. Eckert, on duty at the War Department, Washington, D. C.

I have the gratification and honor to state that all of the officers connected with United States military telegraphs during this fiscal year received from the President of the United States for "meritorious services" promotion of two or more grades of brevet rank, as follows :

Colonel A. Stager, aide-de-camp, assistant quartermaster, to brevet brigadier general; Major T. T. Eckert, aide-de-camp, assistant quartermaster, to brevet brigadier general; Captain S. G. Lynch, assistant quartermaster, to brevet lieutenant colonel; Captain W. L. Gross, assistant quartermaster, to brevet lieutenant colonel; Captain J. C. Van Duzer, assistant quartermaster, to brevet lieutenant colonel; Captain R. C. Clowry, assistant quartermaster, to brevet lieutenant colonel; Captain J. R. Gilmore, assistant quartermaster, to brevet lieutenant colonel.

The following table shows the amount of money for which I have been accountable during the fiscal year 1866:

On hand July 1, 1865—	
Received from officers.....	\$12, 561 10
Received from United States treasury.....	563, 900 00
Received from other sources.....	3, 737 00
Total.....	<u>580, 198 10</u>
Expended during the year—	
Transferred to officers.....	\$567, 637 00
On hand June 30, 1866.....	12, 561 10
Total.....	<u>580, 198 10</u>

I have the honor to submit the following résumé, showing the number of miles of United States military telegraph lines constructed yearly during the continuance of the rebellion, total number of miles constructed, number of miles in operation each year, the amount of funds applied yearly to military telegraphs, and the total amount of funds furnished by the United States for the operation and maintenance of the United States military telegraph, from May 1, 1861, to June 30, 1866:

	Land lines.	Submarine.
Number of miles constructed up to June 30, 1862.....	3, 508	63
Number of miles constructed during fiscal year 1863...	1, 755	....
Number of miles constructed during fiscal year 1864...	3, 692	15½
Number of miles constructed during fiscal year 1865...	3, 246	68½
Number of miles constructed during fiscal year 1866...	2, 010	30½
Total of each description.....	<u>14, 211</u>	<u>178</u>
Total of both classes.....		14, 389
Add of temporary field lines constructed during the war.....		1, 000
Total number of miles of United States military telegraph, field, land, and submarine lines, constructed.....		<u>15, 389</u>

Number of miles of United States military telegraph lines in operation during—

	Land.	Submarine.
The fiscal year 1862.....	3, 658	63
The fiscal year 1863.....	5, 798	28
The fiscal year 1864.....	6, 911	55½
The fiscal year 1865.....	8, 501	121½
The fiscal year 1866.....	8, 253	81

In addition to the eight thousand six hundred and twenty-two and one-half miles of military telegraph lines in operation during the year 1865, there were about five thousand miles of commercial telegraph lines within the southern States under the control and supervision of the officers of the United States military telegraph.

Amount of money received from the United States treasury up to June 30, 1862.....	\$271, 500 00
For the fiscal year ending June 30, 1863.....	418, 000 00
For the fiscal year ending June 30, 1864.....	606, 000 00

For the fiscal year ending June 30, 1865.....	\$1, 360, 000. 00
For the fiscal year ending June 30, 1866.....	563, 900 00

Total amount received and expended or transferred by me as chief of United States military telegraphs.....	3, 219, 400 00
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The operations of my office do not require the rendition of any other forms called for by your order than are embraced in this report.

Very respectfully, your obedient servant,

ANSON STAGER,

*Bvt. Brig. Gen., A. Q. M., Chief U. S. Military Telegraphs.*

Brevet Major General M. C. MEIGS,

*Quartermaster General U. S. Army, Washington, D. C.*

A true copy:

JOHN V. FUREY,

*Brevet Major, A. Q. M.*

No. 9.

#### FIFTH DIVISION—REGULAR SUPPLIES.

QUARTERMASTER GENERAL'S OFFICE,

*Washington, D. C., October 9, 1866.*

GENERAL: I have the honor to transmit, herewith, duplicate copies of the annual report of the operations of the division of regular supplies for the year ending June 30, 1866.

I am, very respectfully, your obedient servant,

S. L. BROWN,

*Bvt. Brig. Gen. in Charge Division Regular Supplies.*

Major General M. C. MEIGS,

*Quartermaster General U. S. Army, Washington, D. C.*

FIFTH DIVISION, QUARTERMASTER GENERAL'S OFFICE,

*Washington, D. C., October 7, 1866.*

GENERAL: I have the honor to submit the following report of the operations of the division of regular supplies for the fiscal year ending June 30, 1866:

#### FORAGE.

The sudden closing of the war left an immense quantity of forage on hand at the various depots of supply, and on the 1st of July, 1865, the following quantities were in store, which have since been consumed: 1,612,170 bushels of corn; 2,527,011 bushels of oats; 26,139 tons of hay; 1,207 tons of straw.

During the fiscal year there have been purchased and issued, in addition, 1,690,621 bushels of corn; 2,534,139 bushels of oats; 110,508 tons of hay; 1,516 tons of straw; making a total consumption during the year of 3,302,791 bushels of corn; 5,061,150 bushels of oats; 136,647 tons of hay; 2,723 tons of straw.

It will be observed that nearly one-half of all the grain and straw and a large portion of the hay used during the year was on hand July 1, 1865, which has much reduced the expenditures for forage. Careful storage and frequent turning and returning of the grain prevented the loss of but a fractional part by decay and weevil. The forage purchased during the year was procured, whenever possible, by advertisement and contract, the quantity purchased in open market being comparatively small.

The armies have been fully supplied during the year, and in no instance known to this office has a public animal died for lack of forage. Weekly forage reports have been received from every department quartermaster, and have been carefully examined and all mistakes and discrepancies corrected. The exact condition of the forage supply at every post where troops have been serving has been known, and ample arrangements for prospective demands have been made in time to anticipate such demands, thereby avoiding the extra expense generally incident upon hurried purchases made to meet pressing requirements.

The supply of the posts on the plains with forage has always imposed a heavy financial burden upon this department. The Missouri river has for years marked the limit of the cereal-producing region of the west, and grain transported from that point, when it reached the garrisons stationed near the Rocky mountains, had reached an enormous price; the cost of foraging one horse equalled the cost of feeding a dozen animals in the States.

The influx of population and the growth of settlements along the great routes of travel have partially developed the agricultural resources of the Territories, and new markets of supply have been opened in the vicinity of posts heretofore supplied from the Missouri river.

The policy of supplying posts from the agricultural districts nearest them has, during the last year, been fully inaugurated, and the quantity of forage transported from the Missouri river to supply frontier posts has been greatly diminished. The cost of foraging the public animals upon the plains will consequently be much less the coming winter than ever before.

#### FUEL.

There was consumed during the fiscal year 113,497 tons bituminous coal; 80,462 tons anthracite steamer coal; 6,346 tons egg stove coal; total, 200,305 tons—88,710 tons of which were on hand July 1, 1865.

The quantity of wood used cannot be stated, as the greater portion was cut by troops and not regularly purchased by contract.

The nature of peat and the various methods used for its manufacture into fuel have been thoroughly investigated, and explorations have been made in the vicinity of posts, upon the plains with a view to the discovery of beds of peat available for fuel.

The high price of wood at several of the posts renders the discovery of a new fuel highly desirable.

Peat has been discovered in the vicinity of Denver and also near Fort Sedgwick. A machine for the manufacture of the peat into fuel is now on the way to Fort Sedgwick, and a thorough trial of the qualities of the peat as a fuel will be made by the quartermaster of this post.

#### CONTRACTS.

During the year, three hundred and fifty-four contracts for forage were made and approved, thirty-eight of which were for quantities as required, and three hundred and sixteen for specified quantities, amounting as follows: 1,254,741 bushels of corn; 1,878,084 bushels of oats; 99,100 bushels of barley; 64,371 tons of hay; 1,260 tons of straw; 330 tons of fodder.

There were made and approved during the year one hundred and forty-one contracts for fuel, sixty-seven of which were for quantities as required, and seventy-four for specified quantities, amounting as follows: 59,504 cords of wood; 5,700 tons anthracite steamer coal; 6,000 tons egg stove coal; 1,889 tons bituminous coal; 13,800 bushels of charcoal.

#### STATIONERY.

Twenty contracts were let for the delivery of stationery, but the greater proportion, at least three-fourths, of all used during the year was on hand July 1 1865, and has been transferred from one post to another as needed.



## CLAIMS.

The records of this division exhibit the following action upon claims presented under the act of July 4, 1864 :

On hand, July 1, 1865, 669 claims, amounting to .....	\$699,814 00
Received from July 1, 1865, to July 1, 1866, 4,421 claims, amounting to.....	3,091,508 00
Total, 5,090 claims, amounting to .....	<u>3,791,322 00</u>

These claims were for—

Forage.....	\$2,147,741 00
Fuel.....	1,615,701 00
Straw.....	19,390 00
Stationery.....	8,490 00
Total .....	<u>3,791,322 00</u>

The following action was taken upon these claims:

Approved, 400 claims, amounting to.....	\$170,890 00
Rejected, 1,999 claims, amounting to.....	1,893,559 00
On hand, undergoing examination, 2,691 claims, amounting to.....	1,726,873 00
Total, 5,090 claims, amounting to.....	<u>3,791,322 00</u>

## VOUCHERS.

The following exhibits the action taken with reference to vouchers :

On hand July 1, 1865, 1,102 vouchers, amounting to.....	\$179,387 00
Received from July 1, 1865, to July 1, 1866, 5,351 vouchers, amounting to.....	819,917 00
Total of 6,453 vouchers, amounting to.....	<u>999,304 00</u>

For supplies, as follows :

For forage.....	\$824,917 00
For fuel.....	149,806 00
For straw.....	13,287 00
For stationery.....	11,294 00
	<u>999,304 00</u>

Upon which the following action was taken :

Approved .....	2,449 vouchers, amounting to.....	\$457,617 00
Disapproved .....	1,408 vouchers, amounting to.....	219,778 00
On hand, to be examined, .....	2,596 vouchers, amounting to.....	321,909 00
Total.....	6,453 vouchers, amounting to.....	<u>999,304 00</u>

## CLERKS.

During this year from twelve to fifteen clerks have been employed in this division. They have written 9,348 letters, 8,072 circular letters, and 3,997

endorsements, and by their attention to duty have proved themselves worthy of commendation.

I am, very respectfully, your obedient servant,  
S. L. BROWN,  
Colonel Quartermaster's Department,  
Brevet Brigadier General, in Charge Division Regular Supplies.  
Brevet Major General M. C. MEIGS,  
Quartermaster General U. S. Army, Washington, D. C.

No. 10.

SIXTH DIVISION—BARRACKS, QUARTERS AND CEMETERIES.

QUARTERMASTER GENERAL'S OFFICE,  
Washington, D. C., October 10, 1866.

GENERAL: In compliance with General Orders No. 49, current series, from this office, I have the honor to submit my annual report for the fiscal year ending June 30, 1866.

The annual report called for by General Orders No. 39, Quartermaster General's Office, July 1, 1865, was made and presented by me October 16, 1865.

During the last fiscal year I have been on duty in charge of the sixth division of the Quartermaster General's office. The nature of my duties does not require report under forms A to K, (General Orders No. 49, current series,) inclusive.

The number and character of buildings and wharves constructed during the fiscal year, with the aggregate cost of the same, and the number and character of buildings and wharves sold at auction, with the aggregate amount received from such sales, is shown in the following tabular form:

Number of buildings and wharves constructed during the fiscal year ending June 30, 1866.

Character of structure, and where constructed.	No.	Cost.
Barracks, storehouses, &c., Washington, D. C.....	20	\$20,686 34
Barracks, storehouses, &c., Vicksburg, Mississippi.....	2	2,575 37
Barracks, storehouses, &c., Fort Stevens, Oregon.....	5	23,730 62
Stable, Washington, D. C.....	1	410 16
Sheds, Washington, D. C.....	8	8,962 20
Wharves.....	None.	.....
Total.....	36	56,366 69

Number of buildings and wharves sold during the fiscal year ending June 30, 1866.

Character of structure.	No.	Am't received.
Hospitals, barracks, storehouses, &c.....	4,228	} \$447,643 14
Sheds.....	58	
Stables.....	106	
Corral.....	1	
Wharves.....	2	230 00
Total.....	4,395	447,873 14

The detailed statements from which the above table is compiled accompany the report made in the eighth division, Quartermaster General's office.

The following tabular statement exhibits the number and value of claims on file July 1, 1865, presented, rejected, referred for payment during the fiscal year, and awaiting examination at its close, in the sixth division.

These claims are for the most part for occupation, for military purposes, of grounds and buildings; the remainder for building materials, commutation of quarters, and extra-duty pay.

*Statement of the number and value of claims on hand July 1, 1865, presented, rejected, referred for payment, and awaiting examination, July 1, 1866, in the sixth division, Quartermaster General's office, for the fiscal year ending June 30, 1866.*

1. Amounts stated :

	No.	Value.
On hand and presented.....	4, 270	\$3, 140, 937 21
Rejected.....	2, 176	1, 543, 465 56
Referred for payment.....	1, 017	242, 946 69
Awaiting examination.....	1, 077	1, 354, 524 96

2. Amounts not stated :

On hand and presented.....	677	.....
Rejected.....	430	.....
Referred for payment.....	87	71, 506 62
Awaiting examination.....	160	.....

Total:

On hand and presented.....	4, 947	3, 140, 937 21
Rejected.....	2, 606	1, 543, 465 56
Referred for payment.....	1, 104	314, 453 31
Awaiting examination.....	1, 237	1, 354, 524 96

Subjects connected with cemeterial operations have demanded and received a large share of the attention of the sixth division during the past year, the results of which are embodied in a special report, herewith respectfully submitted.

I am, general, very respectfully, your obedient servant,

J. J. DANA,

*Colonel, Quartermaster's Dep't. Bvt. Brig. Gen., U. S. A.*

Brevet Major General M. C. MEIGS,

*Quartermaster General, U. S. A.*

QUARTERMASTER GENERAL'S OFFICE, 6TH DIVISION,  
Washington, D. C., September 6, 1866.

SIR: In obedience to General Orders No. 49, Quartermaster General's office, of June 15, 1866, I have the honor to submit herewith my annual report of operations in this division for the fiscal year ending June 30, 1866, under the head of—

CEMETERIAL.

The progress made in the work of protecting and marking the graves of the soldiers of our armies in various sections of the Union has been generally gratifying, although the work of removal is now partially suspended in the extreme southern States, owing to the hot weather.

In the arrangement of the following report the system of military divisions and departments in force on the 30th of June, 1866, has been adhered to.

A circular sheet of questions, (a copy of which is enclosed, marked C,) was prepared and forwarded to the chief quartermasters of departments and military

divisions, and the information given is mainly based on their replies, where replies were received.

### I.—DEPARTMENT OF THE EAST.

1. In the department of the east, the graves and graveyards of Union soldiers were generally in good condition, and needed very little improvement. No full report has been received from this department.

2. The principal points reported where Union soldiers are buried are, 1st, Cypress Hill cemetery, near New York city, containing 3,299 graves; 2d, Portsmouth Grove, Rhode Island, where 298 soldiers are buried; 3d, New Haven, Connecticut, where are 345 graves; and 4th, Beverly, New Jersey, where are 206 graves.

3. The total number of bodies of United States soldiers reported as buried in the department of the east is five thousand four hundred and ninety-eight, (5,498)

4. The number of the same which can probably be identified is four thousand seven hundred and forty-four, (4,744.)

5. The number of the same which cannot probably be identified is seven hundred and fifty-four, (754.)

6. No bodies are reported as having been reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter is three hundred and six, (306.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is not reported.

9. The expenditures required for this purpose for the next fiscal year are not reported.

10. The average cost of reinterment of each body in this department has not been reported.

### II.—MIDDLE MILITARY DEPARTMENT.

1. In the middle military department very little has been done. It is believed that little or nothing has been done towards the improvement of the cemeteries in this department, outside of those established under private management at Gettysburg and Antietam.

2. From the report of the commissioners of the Gettysburg cemetery, published in March, 1865, it appears that that cemetery contains 3,512 graves, all with granite headstones. The cemetery is surrounded with a substantial stone wall, with ornamental iron gates. Apparently about \$50,000 has been expended by the commissioners, derived from appropriations from the several States.

At Antietam not much has been accomplished beyond enclosing and grading the grounds; and the cemetery association have obtained assistance from the War Department in transporting the bodies to the grounds. This cemetery will eventually contain about 4,000 bodies.

The principal other localities where United States soldiers are reported to be interred in this department are, 1st, Baltimore, Maryland, where are 2,467 graves; 2d, Frederick, Maryland, where are about 1,100 graves; and 3d, Harper's Ferry, Virginia, where are 663 graves.

3. The total number of bodies of United States soldiers supposed to be buried in the middle military department is sixteen thousand nine hundred and ninety-two, (16,992.)

4. The number of the same which can probably be identified is eight thousand seven hundred and eighty-five, (8,785.)

5. The number of the same which cannot probably be identified is eight thousand two hundred and seven, (8,207.)

6. The number of bodies which have been reinterred to date of report is three thousand nine hundred and sixty-two, (3,962.)

7. The number of bodies which it is proposed to reinter hereafter is nine thousand two hundred and twenty-nine, (9,229.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is not reported.

9. The expenditures required for this purpose for the next fiscal year are not reported.

10. The average cost of reinterment of each body in this department is not reported.

### III.—DEPARTMENT OF VIRGINIA.

In the department of Virginia no work has been done except either under the charge of Colonel Ludington, chief quartermaster of the department of Washington, or under that of Brevet Lieutenant Colonel J. M. Moore, assistant quartermaster, depot of Washington. The operations of both of these officers will be found detailed under the department of Washington.

There still remains very much to be done in this department, both in finishing the national cemeteries commenced by the above officers, and also in collecting and enclosing the remains at many points where national cemeteries are not yet established, such as Petersburg, Danville, Lynchburg, and the intermediate country; also in the Shenandoah valley, and on all the various grounds of the battles and skirmishes of our armies in Virginia; which, including those of the cavalry, are found in nearly every county in the State.

The statistics of the department of Virginia are tabulated with those of the depot of Washington.

### IV.—DEPARTMENT OF THE CAROLINAS.

1. In the department of the Carolinas there has been comparatively little to do, and the graves there are now generally in a satisfactory condition. No general report has been received from the chief quartermaster of this department, and the statistics hereafter given are therefore somewhat conjectural.

2. The principal points where the bodies of United States soldiers are known to be buried in the Carolinas are as follows:

North Carolina: 1st, Wilmington, 2,550 graves; 2d, Goldsboro', 1,771 graves; and 3d, Newbern, 1,352 graves.

South Carolina: 1st, Beaufort, 1,354 graves; and 2d, Hilton Head, 1,000 graves.

At the prison pen near Salisbury, North Carolina, are also the bodies of about 5,500 Union prisoners of war.

At the prison pen near Florence, South Carolina, are the bodies of some 2,950 Union prisoners.

3. The total number of United States soldiers supposed to be buried in the department of the Carolinas is seventeen thousand eight hundred and eighty-five, (17,885.)

4. The number of the same which can probably be identified is eight thousand and sixty-two, (8,062.)

5. The number of the same which cannot probably be identified is nine thousand eight hundred and twenty-three, (9,823.)

6. No bodies are reported as reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter is four hundred and seventy-four, (474.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is not reported.

9. The expenditures required for this purpose for the next fiscal year are not reported.

10. The average cost of reinterment of each body in this department is eleven dollars, (\$11.)

## V.—MILITARY DIVISION OF THE ATLANTIC.

1. In the military division of the Atlantic, therefore, (containing the departments of the east, the middle, and the Carolinas, but exclusive of the department of Virginia, which will be found reported under the department of Washington,) there are three national cemeteries, containing at present 7,810 graves, and expected to contain 7,810 graves when finished.

2. There are also ninety-one cemeteries other than national, containing 32,565 graves of Union soldiers.

3. The total number of bodies of United States soldiers reported as buried in the military division of the Atlantic is forty thousand three hundred and seventy-five, (40,375.)

4. The number of the same which can probably be identified is twenty-one thousand five hundred and ninety-one, (21,591.)

5. The number of the same which cannot probably be identified is eighteen thousand seven hundred and eighty-four, (18,784.)

6. The number of bodies which have been reinterred to date of report is three thousand nine hundred and sixty-two, (3,962.)

7. The number of bodies which it is proposed to reinter hereafter is six thousand and forty-seven, (6,047.)

7. The estimated aggregate of expenditures on account of cemeteries and interments in this military division to the 30th of June, 1866, is not reported.

9. The expenditures required for this purpose for the next fiscal year are not reported.

10. The average cost of reinterment of each body in this military division is not reported.

## VI a.—DEPARTMENT OF WASHINGTON.

1. In the department of Washington, under the superintendence of Colonel M. I. Ludington, chief quartermaster, assisted by Captain John R. Hynes and Brevet Major James Gleason, assistant quartermasters, in addition to the care of the cemeteries at Annapolis and Point Lookout, Maryland, containing 2,675 and 3,523 graves, respectively, the dead have been disinterred from all points in Maryland and Virginia within a circuit of thirty-five miles from Washington, and removed to the national cemetery at Arlington, to the number of 2,127.

A numbered list of these exhumations was prepared by Captain John R. Hynes, assistant quartermaster, and a book of sketches of the various localities whence the bodies were taken. Figures are marked on the sketches to correspond with the numbers on the list, the list giving, in each case, the present locality of the body as reinterred at Arlington. This list and book are on file at the office of Lieutenant Colonel James M. Moore, in this city, thereby aiding the identification of these bodies by their friends, particularly in the case of those marked "unknown." In all cases, whether the bodies were known or unknown, the locality from which they were removed, together with the date of removal, was placed upon the headboards.

2. To Colonel Ludington has also been assigned the work of reintering the bodies from the line of the Orange and Alexandria railroad, as far south as Orange Court-house, and from the district tributary to that road on each side, extending half-way to the line of the Richmond and Fredericksburg railroad on the east, and to the Blue Ridge on the west; the bodies north of the Rappahannock river being removed to Arlington cemetery, and those south of the same to a cemetery now being established at Culpeper Court-house, which will contain, when finished, about 4,000 graves.

A vault has also been constructed at Arlington, under the superintendence of Colonel Ludington, to which have been removed such scattered bones and disorganized remains from the battle-fields of Bull Run and Manassas as could not be identified for separate burial.

3. The total number of bodies of United States soldiers supposed to be



buried in the department of Washington, under the charge of Colonel Ludington, is five thousand two hundred and eighty-seven, (5,287.)

4. The number of the same which can probably be identified is four thousand one hundred and eighty, (4,180.)

5. The number of the same which cannot probably be identified is one thousand one hundred and seven, (1,107.)

6. The number of bodies which have been reinterred to date of report is two thousand one hundred and twenty-seven, (2,127.)

7. The number of bodies which it is proposed to reinter hereafter is three thousand one hundred and sixty, (3,160.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department, to June 30, 1866, is twenty-one thousand dollars, (\$21,000;) of which total sum nine thousand five hundred dollars, (\$9,500) have been expended for labor, and the remaining eleven thousand five hundred dollars (\$11,500) for materials.

9. The expenditures required for this purpose for the next fiscal year are estimated at thirty thousand dollars, (\$30,000.)

10. The average cost of reinterment of each body in this department is nine dollars, (\$9.)

#### VI b.—DEPOT OF WASHINGTON.

1. At the depot of Washington, under the charge of Brevet Lieutenant Colonel James M. Moore, assistant quartermaster United States army, the cemeterial operations for a large part of the department of Virginia have centred.

This is in addition to the care of the cemeteries around Washington city, six (6) in number, and containing the following number of graves:

1. United States Military Asylum cemetery.....	5,717	graves.
2. Harmony national cemetery.....	3,251	"
3. Battle cemetery.....	40	"
4. Union cemetery.....	1,012	"
5. Arlington National cemetery.....	9,795	"
6. Alexandria cemetery.....	3,601	"

Total.....	23,416	"
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2. In addition to these Colonel Moore has established the following national cemeteries in the department of Virginia:

7. Hampton national cemetery, near Hampton, Virginia....	3,141	"
8. Belle Isle national cemetery, near Richmond, Virginia...	155	"
9. Cold Harbor national cemetery, nine miles from Richmond, Virginia.....	1,930	"
10. Seven Pines national cemetery, ten miles from Richmond, Virginia.....	1,335	"
11. Glendale national cemetery, near Malvern Hill, fifteen miles from Richmond, Virginia.....	1,077	"
[The final number expected to be in this cemetery is 3,000 graves.]		
12. Fort Harrison national cemetery, eight miles east of Richmond, Virginia.....	746	"
[The final number expected to be in this cemetery is 3,800 graves.]		
13. Fredericksburg national cemetery on Marye's heights, Fredericksburg, Virginia.....	2,442	"
[The final number expected to be in this cemetery is 15,000 graves.]		
14. Ball's Bluff national cemetery, on the Potomac, thirty-five miles above Washington, D. C.....	54	"

15. Winchester national cemetery, near Winchester, Virginia..	3,400 graves.
[The final number expected to be in this cemetery is 5,700 graves.]	
16. Hollywood national cemetery, near Richmond, Virginia..	237 "
17. Oakwood national cemetery, near Richmond, Virginia....	210 "
Total.....	14,727 "

It is also intended to establish a very considerable cemetery at "Poplar Grove church," near Petersburg, Virginia, to contain all the bodies from some twenty miles around that city, with the exception of those in the cemeteries at City Point and Point of Rocks.

Cemeteries will also be established at Danville, Lynchburg, Charlottesville, and other points in Virginia, wherever found necessary.

Some further statistics of the national cemeteries under the charge of Colonel Moore are contained in a tabular statement enclosed and marked D.

The work of compiling the records of burials of deceased United States soldiers throughout the United States, with the exception of the military division of the Tennessee, of alphabetically arranging their names, and preparing them for publication in the form of "Rolls of Honor," has also been an important specialty of the depot of Washington.

The names of nearly thirty-three thousand soldiers have thus been published already, as appears from a table in a later part of this report.

At this depot, also, about four thousand permits have been issued during the year for the removal of bodies from the different national cemeteries; and more than five thousand letters have been answered, requesting information about the burial-places of the relatives and friends of the writers.

The work under Colonel Moore's charge has been pushed with energy, and there is no doubt, from the proofs of taste and judgment he has before given, that the national cemeteries in Virginia, when completed, will reflect credit upon him, upon the quartermaster's department, and upon the government.

3. The total number of bodies of United States soldiers supposed to be buried in the department under Colonel Moore's charge is one hundred thousand.

4. The number of the same which can probably be identified is forty-six thousand, (46,000.)

5. The number of the same which cannot probably be identified is fifty-four thousand, (54,000.)

6. The number of bodies which have been reinterred to date of report is fifty-two thousand and six, (52,006.)

7. The number of bodies which it is proposed to reinter hereafter is forty-seven thousand nine hundred and ninety-four, (47,994.)

8. The estimated aggregate of expenditures, on account of cemeteries and interments, in the department under Colonel Moore's charge, to the 30th of June, 1866, is eight hundred and fifty thousand dollars, (\$850,000.)

9. The expenditures required for this purpose for the next fiscal year are estimated at four hundred thousand dollars, (\$400,000.)

10. The average cost of reinterment of each body, in this department, is eight dollars, (\$8.)

#### VI.—DEPARTMENT OF WASHINGTON CONSOLIDATED.

1. In the department of Washington, (Washington and depot of Washington, including the department of Virginia,) therefore, there are now twenty national cemeteries, containing 41,353 graves. These, with the addition of two national cemeteries to be established, are expected to contain 100,721 graves when finished.

2. There are also three cemeteries other than national, which contain a small number of soldier's graves.

3. The total number of bodies of United States soldiers supposed to be buried

in the departments of Washington and Virginia is one hundred and five thousand two hundred and eighty-seven, (105,287.)

4. The number of the same which can probably be identified is fifty thousand one hundred and eighty, (50,180.)

5. The number of the same which cannot probably be identified is fifty-five thousand one hundred and seven, (55,107.)

6. The number of bodies which have been reinterred to date of report is fifty-four thousand one hundred and thirty-three, (54,133.)

7. The number of bodies which it is proposed to reinter hereafter is fifty-one thousand one hundred and fifty-four, (51,154.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in these departments, to the 30th of June, 1866, is eight hundred and seventy one thousand dollars, (\$871,000 )

9. The expenditures required for this purpose for the next fiscal year are estimated at four hundred and thirty thousand dollars, (\$430,000.)

10. The average cost of reinterment of each body in these departments is eight dollars and fifty cents, (\$8 50 )

VII.—DEPARTMENT OF THE OHIO.

1. In the department of the Ohio considerable progress has been made in the work of protecting the remains of soldiers, and preserving their records of interment, under the intelligent and energetic direction of Brevet Brigadier General C. H. Hoyt, chief quartermaster.

2. There are about thirty-four points reported in this department where the bodies of Union soldiers are interred, the principal of which are:

1. Camp Dennison, Ohio, containing.....	366	Union graves.
2. Columbus, Ohio, containing.....	364	"
3. Cincinnati, Ohio, containing .....	696	"
4. Jackson, Michigan, containing .....	105	"
5. Indianapolis, Indiana, containing .....	1,220	"
6. Camp Butler, near Springfield, Illinois, containing.....	600	"
7. Cairo, Illinois, containing .....	5,915	"
8. Quincy, Illinois, containing.....	213	"
9. Chicago, Illinois, containing .....	320	"

There are also eight places reported as containing the bodies of rebel prisoners of war, the principal of which are:

1. Johnson's Island, Ohio, containing.....	208	rebel graves.
2. Columbus, Ohio, containing .....	2,000	"
3. Indianapolis, Indiana, containing.....	1,573	"
4. Camp Butler, Illinois, containing .....	614	"
5. Rock Island, Illinois, containing .....	1,960	"
6. Chicago, Illinois, containing .....	4,105	"

At Camp Dennison, Ohio, the grounds are well cared for, with fence and headboards in good condition. The same remark applies to Columbus and Cincinnati, Ohio, and Jackson, Michigan.

At Indianapolis the bodies are in Greenlawn cemetery, which is to be abandoned; and it is anticipated that the bodies will be removed to Crown Hill cemetery, to which the bodies of citizens are now being transferred.

At Camp Butler, Rock Island, and Quincy, Illinois, the cemeteries are in good condition.

At Cairo, Illinois, it has been proposed to concentrate all the remains from that neighborhood (and perhaps those from Columbus and Paducah, Kentucky) at Mound City, Illinois; but it has lately been represented that the site at the latter place is subject to overflow, and the question of removing them all to a high site, to be donated, at Columbus, Kentucky, is under consideration.

At Chicago, Illinois, the bodies of the rebel prisoners which had been interred within the limits of the city have been removed to suitable grounds purchased in one of the suburban cemeteries.

3. The total number of bodies of United States soldiers supposed to be buried in the department of the Ohio is twelve thousand seven hundred and forty-five, (12,745.)

4. The number of the same which can probably be identified is nine thousand five hundred and eighty-two, (9,582.)

5. The number of the same which cannot probably be identified is three thousand one hundred and sixty three, (3,163.)

6. The number of bodies which have been reinterred to date of report is six hundred and fifty-five, (655.)

7. The number of bodies which it is proposed to reinter hereafter is four thousand nine hundred and seventy-eight, (4,978.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is one hundred and six thousand three hundred and fifteen dollars, (\$106,315.)

9. The expenditures required for this purpose for the next fiscal year are estimated at fifteen thousand two hundred and sixty-three dollars, (15,263.)

10. The average cost of reinterment of each body in this department is five dollars and sixty-six cents, (\$5 66,) the distance of transportation being usually very short.

#### VIII.—DEPARTMENT OF THE MISSOURI.

1. In the department of the Missouri, out of 10,677 dead reported, 10,417 are in the State of Missouri; and of them, 3,613 are at Jefferson barracks, and 4,774 in St. Louis—leaving 2,030 reported at other points in Missouri.

2. Very few reports have been received from Missouri, and it is believed that this number represents but a small fraction of the dead Union soldiers scattered throughout that State, where a border warfare was carried on almost without intermission, and at almost every cross-road in the State. It is thought that the efforts of competent officers, interested in the work, would result in the discovery and report of thousands of graves now unmentioned. I would respectfully recommend the assignment of an intelligent and energetic officer to this duty for the State of Missouri, under the senior and supervising quartermaster of the military division of the Mississippi, [now Missouri.]

The remaining two hundred and sixty graves reported in this department are scattered among the various remote posts in Kansas, Colorado, Utah, New Mexico, Nebraska, and Dakota.

These are generally reported in good condition, although in many cases requiring fences and headboards, which will soon be completed on the uniform system prescribed in general orders.

The total number of points from which reports have been received in this department is fifty, (50.)

3. The total number of United States soldiers reported as buried in the department of Missouri is ten thousand six hundred and seventy-seven, (10,677.)

4. The number of the same which can probably be identified is eight thousand eight hundred and fifty-five, (8,855.)

5. The number of the same which cannot probably be identified is one thousand eight hundred and twenty-two, (1,822.)

6. No bodies are reported as having been reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter is four hundred and thirty-one, (431.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is only reported for St. Louis city, and amounts to one hundred and one thousand seven hundred and forty-five dollars and sixty-one cents, (\$101,745 61;) of which sum forty-nine thou-

and five hundred and twenty-four dollars and twenty-nine cents (\$49,524 29) have been expended for labor, and the remaining fifty-two thousand two hundred and twenty-one dollars and thirty-two cents (\$52,221 32) for materials.

9. The expenditures required for this purpose for the next fiscal year are not reported.

10. The average cost of reinterment of each body in this department is estimated at twelve dollars, (\$12.)

#### IX.—DEPARTMENT OF THE PLATTE.

1. In the department of the Platte, the only considerable collection of graves is at Keokuk, Iowa, where eight hundred Union soldiers are buried.

2. There are also one hundred and seventy-four at Davenport, and five at Sioux City, Iowa. The remaining four hundred and fifteen graves reported in the department of the Platte are scattered among the remote posts in Minnesota, Montana, Nebraska, and Dakota. From a large number of the posts in this department no reports have yet been received; and from several the report is made that, owing to the healthy nature of the country, no necessity for a post cemetery has yet occurred.

The number of points from which reports have been received in this department is nineteen, (19.)

3. The number of United States soldiers reported as buried in the department of the Platte is one thousand three hundred and ninety-four, (1,394.)

4. The number of the same which can probably be identified is one thousand two hundred and six, (1,206.)

5. The number of the same which cannot probably be identified is one hundred and eighty-eight, (188.)

6. No bodies have been reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter is eleven, (11.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department, to the 30th of June, 1866, is not reported.

9. The expenditures required for this purpose for the next fiscal year are not reported.

10. The average cost of reinterment of each body in this department is not reported.

#### X.—DEPARTMENT OF THE ARKANSAS.

1. In the department of the Arkansas the principal cemeteries are at Fort Smith, containing 1,217 bodies, and at Little Rock, containing 2,237.

2. At Helena are 1,784 graves, but scattered; and it is proposed to remove the bodies from that point, as well as all other scattered bodies in Arkansas on the west shore of the Mississippi river, to the national cemeteries at Memphis and Vicksburg, on the east shore.

3. The total number of United States soldiers supposed to be buried in the department of Arkansas is eleven thousand six hundred and twenty-nine, (11,629.)

4. The number of the same which can probably be identified is six thousand four hundred and ninety-two, (6,492.)

5. The number of the same which cannot probably be identified is five thousand one hundred and thirty-seven, (5,137.)

6. The number of bodies reported as reinterred is two, (2.)

7. The number of bodies which it is proposed to reinter hereafter is two thousand five hundred and seventy-two, (2,572.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is four thousand three hundred and twenty-five dollars, (\$4,325.)



9. The expenditures required for this purpose for the next fiscal year are estimated at twelve thousand eight hundred and eighty-one dollars and forty-eight cents, (\$12,881 48.)

10. The average cost of reinterment of each body in this department is estimated at eleven dollars, (\$11.)

#### XI.—MILITARY DIVISION OF THE MISSISSIPPI.

1. In the entire military division of the Mississippi, therefore, (including the department of the Ohio, the Missouri, the Platte, and the Arkansas,) it will thus appear there are eight national cemeteries, containing now 15,880 graves, but expected to contain 18,295 graves when completed.

2. There are also a number of United States soldiers and a large number of rebel prisoners of war buried in eighty-five local cemeteries other than national.

3. The number of bodies of United States soldiers supposed to be buried in the military division of the Mississippi is thirty-six thousand four hundred and forty-five, (36,445 )

4. The number of the same which can probably be identified is twenty-six thousand one hundred and thirty-five, (26,135.)

5. The number of the same which cannot probably be identified is ten thousand three hundred and ten, (10 310.)

6. The number of bodies which have been reinterred to date of report is six hundred and fifty-seven, (657.)

7. The number of bodies which it is proposed to reinter hereafter is seven thousand nine hundred and ninety-two, (7,992.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this military division to the 30th of June, 1866, is two hundred and twelve thousand three hundred and eighty-five dollars and sixty-one cents, (\$212,385 61.)

9. The expenditures required for this purpose for the next fiscal year, as far as reported, are twenty-eight thousand one hundred and forty-four dollars and forty-eight cents, (\$28,144 48.)

10. The average cost of reinterment of each body in this military division is estimated at nine dollars and fiftyfive cents, (\$9 55.)

#### XII.—DEPARTMENT OF LOUISIANA.

1. In the department of Louisiana there is a large number of bodies of Union soldiers, but mostly resting in cemeteries and well protected. Many bodies are buried in the levees, and otherwise, near the west shore of the Mississippi river, at and above Vidalia, which it is proposed to remove to the national cemetery at Natchez, Mississippi; but the work cannot be commenced in that climate until very late in the coming autumn.

2. The principal collections of graves in Louisiana are found at the following places, viz: New Orleans, 3,193 graves; Baton Rouge, 2,152; Port Hudson, 563.

3. The total number of bodies of United States soldiers supposed to be buried in the department of Louisiana is thirty-one thousand five hundred, (31,500.)

4. The number of the same which can probably be identified is twenty thousand, (20,000.)

5. The number of the same which cannot probably be identified is eleven thousand five hundred, (11,500.)

6. No bodies have as yet been reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter within the department is one thousand five hundred, (1,500.)

8. The aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is reported as uncertain, no expendi-



tures having been made, other than the ordinary expenses of burying the dead at the different posts in the department.

9. The expenditures required for this purpose for the next fiscal year are estimated at twenty thousand dollars, (\$20,000.)

10. The average cost of reinterment of each body in this department is estimated at about ten dollars, (\$10.)

### XIII.—DEPARTMENT OF TEXAS.

1. In the department of Texas the number of bodies of Union soldiers is not large, and they rest, generally, in small post cemeteries, where they can be protected and cared for without the expense of removal.

2. The principal graveyards are at Fort Brown and Brownsville, containing 485 graves; Brazos Santiago, containing 245; Camp Ford, 232, and Indianola, 121.

3. The total number of bodies of United States soldiers supposed to be buried in the department of Texas is one thousand five hundred and twenty-nine, (1,529.)

4. The number of the same which can probably be identified is one thousand three hundred and twenty-five, (1,325.)

5. The number of the same which cannot probably be identified is two hundred and four, (204.)

6. No bodies have as yet been reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter is unknown.

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is five thousand and seventy-five dollars, (\$5,075,) of which sum one thousand eight hundred and twenty-five dollars (\$1,825) have been expended for labor, and the remaining three thousand two hundred and fifty dollars (\$3,250) for materials.

9. The expenditures required for this purpose for the next fiscal year are estimated at three thousand dollars, (\$3,000.)

10. The average cost of reinterment of each body in this department is not reported.

### XIV.—DEPARTMENT OF FLORIDA.

1. In the department of Florida no steps have been taken towards establishing national cemeteries. The number of bodies is small, and they now rest in most cases in the post cemeteries, where they can receive all the care needed.

2. The principal point at which Union soldiers are buried is Barrancas, containing 504 graves.

3. The total number of bodies of United States soldiers supposed to be buried in the department of Florida is one thousand one hundred and seventy-eight, (1,178.)

4. The number of the same which can probably be identified is three hundred and seventy, (370.)

5. The number of the same which cannot probably be identified is eight hundred and eight, (808.)

6. No bodies have been reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter is four hundred and twelve, (412.)

8. No expenditures have been reported made on account of cemeteries and interments in this department to the 30th of June, 1866.

9. No expenditures for this purpose for the next fiscal year have been estimated for.

10. The average cost of reinterment of each body in this department is not reported.

## XV.—MILITARY DIVISION OF THE GULF.

1. In the entire military division of the Gulf, (containing the departments of Louisiana, Texas, and Florida,) it thus appears that no national cemeteries have been established; nor will any be likely to be established. The greater part of the bodies needing reinterment in this military division will probably be removed to the military division of the Tennessee, and be reinterred in national cemeteries there.

2. The balance will remain undisturbed in the local cemeteries, wherein they are now interred. There are now soldiers' graves to be found in forty-three such cemeteries in this department.

3. The total number of bodies of United States soldiers supposed to be buried in the military division of the Gulf is thirty-four thousand two hundred and seven, (34,207.)

4. The number of the same which can probably be identified is twenty-one thousand six hundred and ninety-five, (21,695.)

5. The number of the same which cannot probably be indentified is twelve thousand five hundred and twelve, (12,512.)

6. No bodies are reported reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter, within the limits of this military division, is one thousand nine hundred and twelve, (1,912.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this military division, to the 30th of June, 1866, is five thousand and seventy-five dollars, (\$5,075.)

9. The expenditures required for this purpose for the next fiscal year are estimated at twenty-three thousand dollars, (\$23,000.)

10. The average cost of reinterment of each body in this military division is estimated at ten dollars, (\$10.)

## XVI.—DEPARTMENT OF TENNESSEE.

1. In the department of Tennessee very much has been accomplished. This department, being the theatre of the most important battles of the southwest, also having great facilities for railroad and river transportation, has afforded one of the best opportunities in the country for the establishment of national cemeteries of considerable extent, laid out with taste, and to which all the bodies for a considerable circuit around each have been removed.

Of these, three (3) are now nearly completed, viz: 1st, Chattanooga, which will contain, when finished, ten thousand (10,000) graves; 2d, Stone's river, containing six thousand (6,000) graves; and 3d, Knoxville, which is to contain two thousand five hundred (2,500) graves; making eighteen thousand five hundred (18,500) in all.

National cemeteries are also in contemplation as follows, viz:

4. Nashville, to contain.....	17,700 graves.
5. Memphis, to contain.....	11,000 "
6. Shiloh, to contain.....	3,850 "
7. Fort Donelson, to contain.....	2,500 "
8. Columbia, to contain.....	1,225 "
Total.....	36,275 "

Add, in cemeteries already established, 18,500, gives a total of 54,775 graves destined to be in national cemeteries in the department of Tennessee.

The national cemetery at Chattanooga, Tennessee, is described as having fine natural advantages. It contains one hundred and seventy-five acres, is located on ground admirably adapted for the purpose, and is substantially enclosed with

a fine stone wall; it is well laid out in graceful paths and beautifully ornamented with flowers and shrubbery; a number of handsome monuments have already been erected by relatives and friends of the deceased. It is under the charge of Chaplain T. B. Van Horne, United States volunteers, who is described as being very well qualified for the work. 608 reinterments were made in this cemetery during the month ending July 15, 1866, principally from the vicinity of Dalton and Resaca, Georgia.

The national cemetery at Stone's River battle-ground is pleasantly situated on high ground, four miles west of Murfreesboro', Tennessee. It contains sixteen (16) acres, and is laid out in a rectangular form, with diagonal avenues from the corners to the centre, where it is proposed to erect a monument costing \$12,000, of which sum \$5,000 are already pledged by the regular army, five regiments of which took part in the battle fought at that place. This cemetery is nearly or quite surrounded by a substantial stone wall, five feet high and two feet thick. It has been under the charge of Chaplain William Earnshaw, United States volunteers, who is said to be in every way fitted for the work.

At the national cemetery at Knoxville, Tennessee, containing eight (8) acres, the graves are arranged in ten (10) concentric circles, with paths radiating from the centre. It is neatly fenced; the graves have been well sodded; trees, plants, and shrubs have been planted; the headboards are new, and it is described as one of the most attractive cemeteries of its size in the country. It has been under the immediate charge of Brevet Major William A. Wainwright, assistant quartermaster.

An account of a peculiarly neat and well-arranged graveyard, established by Hazen's brigade of the army of the Ohio, in 1863, for the remains of their comrades who fell in the battle of Stone's River in 1862, will be found in an extract from a report of Major Whitman, assistant quartermaster, which is enclosed, marked E.

2. From the energetic devotion to the work hitherto shown by Brevet Major General J. L. Donaldson, chief quartermaster of the military division of the Tennessee, whose efforts have been constantly upheld by Major General George H. Thomas, commanding, and who has been ably assisted by Brevet Major E. B. Whitman, assistant quartermaster, there is every reason to believe that equal success will attend the establishment of the other national cemeteries above enumerated, as well as those to be established elsewhere throughout the entire military division of the Tennessee.

3. The total number of bodies of United States soldiers supposed to be buried in the department of Tennessee is sixty seven thousand one hundred and eighty-two, (67,182.)

4. The number of the same which can probably be indentified, is fifty thousand eight hundred and thirty-nine, (50,839.)

5. The number of the same which cannot probably be identified is sixteen thousand three hundred and forty-three. (16,343.)

6. The number of bodies which have been reinterred to date of report is fifteen thousand six hundred and sixty-four, (15,664.)

7. The number of bodies which it is proposed to reinter hereafter is forty-one thousand two hundred and seventy six, (41,276.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is forty-eight thousand nine hundred dollars, (\$48,900.)

9. The expenditures required for this purpose for the next fiscal year are estimated at nine hundred and seventy-seven thousand seven hundred and forty-eight dollars, (\$977,748.)

10. The average cost of reinterment of each body in this department is nine dollars and fourteen cents, (\$9.14 )

## XVII.—DEPARTMENT OF KENTUCKY.

1. In the department of Kentucky, owing to the widely diffused location of the remains, scattered as they are through nearly every county in the State, also to the lack of railroad facilities for transportation, (which would make the expense of removing the bodies very great,) and also owing to the loyal character of a large portion of the population, which will prevent desecration of the graves where they now are, it has been decided not to attempt to concentrate the remains into great national cemeteries, but to fence and mark the graves where they now are, (simply gathering them, where scattered, into one enclosure,) and to trust to the loyal people of Kentucky to protect and care for them.

2. The principal cemeteries in this department will be: 1st, Louisville, which will contain about 4,250 graves when completed; 2d, Camp Nelson, containing 2,176 graves; 3d, Bowling Green, containing 1,234 graves; 4th, Lexington, containing 965 graves; and 5th, Jeffersonville, Indiana, containing 810 graves.

A tracing of the map of Kentucky, marked X, is herewith enclosed, showing the scattered location of the graves in this department.

3. The total number of bodies of United States soldiers supposed to be buried in the department of Kentucky is seventeen thousand seven hundred and seventy-two, (17,772.)

4. The number of the same which can probably be identified is twelve thousand, (12,000 )

5. The number of the same which cannot probably be identified is five thousand seven hundred and seventy-two, (5,772 )

6. The number of bodies which have been reported as reinterred to date of report is forty-six, (46.)

7. The number of bodies which it is proposed to reinter hereafter is three thousand one hundred and twenty, (3,120.).

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is one thousand five hundred and sixty-one dollars, (\$1,561,) which amount has been expended for labor exclusively.

9. The expenditures required for this purpose for the next fiscal year are estimated at eighty-one thousand eight hundred and seventy dollars, (\$81,870.)

10. The average cost of reinterment of each body in this department is estimated at fourteen dollars and fifty cents, (\$14 50.)

## XVIII.—DEPARTMENT OF GEORGIA.

1. In the late department of Georgia there are large numbers of Union graves scattered over the State, particularly along the lines of march of General Sherman's armies. It is designed to concentrate these at Savannah and Marietta, near Atlanta, with the exception of those at the prison pens of Millen and Andersonville, which are preserved in their original locations.

2. The cemetery at Savannah is expected to contain about one thousand (1,000) bodies; that at Marietta about fifteen thousand, (15,000.) The trenches at Millen contain one thousand six hundred and forty-two (1,642) bodies, and the cemetery at Andersonville twelve thousand nine hundred and twelve, (12,912.)

3. The total number of bodies of United States soldiers supposed to be buried in the late department of Georgia is twenty-seven thousand five hundred, (27,500.)

4. The number of the same which can probably be identified is fifteen thousand, (15,000 )

5. The number of the same which cannot probably be identified is twelve thousand five hundred, (12,500.)

6. The number of bodies which have been reinterred to date of report is twelve thousand nine hundred and twelve, (12,912.)

7. The number of bodies which it is proposed to reinter hereafter is twelve thousand five hundred, (12,500.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is one thousand five hundred dollars, (\$1,500,) exclusive of the expenditures incurred at Andersonville.

9. No estimate of expenditures required for this purpose for the next fiscal year is made, and it is reported that no correct estimate can be made until contracts are awarded for furnishing coffins, removing the dead, &c.

10. The average cost of reinterment of each body in this department is estimated at thirteen dollars and fifty cents, (\$13 50.)

#### XIX.—DEPARTMENT OF ALABAMA.

1. In the late department of Alabama the graves have been temporarily protected where they now are, and national cemeteries have also been established at Mobile and Montgomery, the former of which is expected to contain, when finished, about seven hundred and fifty (750) graves, and that at Montgomery about eight hundred and sixty-five (865) graves.

2. At both of these places lots have been donated for the purpose by the city authorities, to which all the bodies from scattered localities throughout the State will be removed.

3. The total number of bodies of United States soldiers supposed to be buried in the late department of Alabama is one thousand seven hundred and thirty-three, (1,733.)

4. The number of the same which can probably be identified is one thousand two hundred and forty-six, (1,246.)

5. The number of the same which cannot probably be identified is four hundred and eighty-seven, (487.)

6. The number of bodies which have been reinterred to date of report is two hundred and ninety, (290.)

7. The number of bodies which it is proposed to reinter hereafter is eight hundred and sixty-one, (861.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is three thousand nine hundred and twenty dollars, (\$3,920,) of which sum nine hundred and thirty dollars (\$930) have been expended for labor, and the remaining two thousand nine hundred and ninety dollars (\$2,990) for materials.

9. The expenditures required for this purpose for the next fiscal year are estimated at thirteen thousand five hundred and thirty-two dollars, (\$13,532.)

10. The average cost of reinterment of each body in this department is estimated at thirteen dollars and fifty cents, (\$13 50.)

#### XX.—DEPARTMENT OF MISSISSIPPI.

1. In the department of Mississippi sites for national cemeteries have been selected at Corinth, Vicksburg, and Natchez, to which will be removed not only all the scattered dead throughout the department, but also (to Corinth) some from southwestern Tennessee and northern Alabama, and (to Vicksburg and Natchez) all those buried on the west bank of the Mississippi river between New Madrid, Missouri, and Vidalia, Louisiana.

2. The cemetery at Corinth is expected, when completed, to contain five thousand five hundred (5,500) bodies; that at Vicksburg twenty-five thousand, (25,000,) and that at Natchez two thousand, (2,000.)

3. The total number of bodies of United States soldiers supposed to be buried in the department of Mississippi is eleven thousand, (11,000.)



4. The number of the same which can probably be identified is four thousand, (4,000 )

5. The number of the same which cannot probably be identified is seven thousand, (7,000.)

6. No bodies have been reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter is eleven thousand, (11,000.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is four hundred and fifty dollars, (\$450,) of which sum three hundred dollars (\$300) have been expended for labor, and the remaining one hundred and fifty dollars (\$150) for materials.

9. The expenditures required for this purpose for the next fiscal year are estimated at fifty-five thousand dollars, (\$55,000.)

10. The average cost of reinterment of each body in this department is estimated at four dollars and eight cents, (\$4 08,) exclusive of transportation.

#### XXI.—MILITARY DIVISION OF THE TENNESSEE.

A connected view of the cemeterial operations throughout the whole military division of the Tennessee, (containing the departments of Tennessee, Kentucky, Georgia, Alabama, and Mississippi,) therefore, presents the following results:

1. The number of national cemeteries already located or established is 10, containing now 36,985 graves.

2. The number of the same to be established is 8; total 18. These are expected to contain 122,571 graves when finished. There are United States soldiers also buried in 173 local cemeteries, other than national, in this military division.

3. The total number of bodies of United States soldiers supposed to be buried in the military division of the Tennessee is one hundred and twenty-five thousand one hundred and eighty-seven, (125,187.)

4. The number of the same, which can probably be identified is eighty-three thousand and eighty-five, (83,085.)

5. The number of the same which cannot probably be identified is forty-two thousand one hundred and two, (42,102.)

6. The number of bodies which have been reinterred to date of report is twenty-eight thousand nine hundred and twelve, (28,912.)

7. The number of bodies which it is proposed to reinter hereafter is sixty-eight thousand seven hundred and fifty-seven, (68,757.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this military division, to the 30th of June, 1866, is fifty-six thousand three hundred and thirty-one dollars, (\$56,331.)

9. The expenditures required for this purpose for the next fiscal year are estimated at one million one hundred and twenty-eight thousand one hundred and fifty dollars, (1,128,150.)

10. The average cost of reinterment of each body in this military division is estimated at ten dollars and ninety-four cents, (\$10 94 )

Under the intelligent direction of Brevet Major E. B. Whitman, assistant quartermaster, who was assigned to the task by Brevet Major General J. L. Donaldson, chief quartermaster, and in great part by the personal efforts of Major Whitman, nearly every part of the military division of the Tennessee has been explored, the battle-fields perambulated, the number and location of graves noted, the names taken down for identification, and such temporary protection given as was necessary to prevent desecration.

The graves in this military division are very widely scattered, in most cases very imperfectly protected; and throughout the long and various marches of Grant's, Buell's, Sherman's, and Thomas's armies, and in the countless skir-



mishes which took place there, the dead appear to have been buried generally where they fell, with very little attempt to record or mark the place.

Under these circumstances the task of Major Whitman, as assigned him by General Donaldson, has been a very difficult and important one, and has been discharged with great zeal, fidelity, and success.

Some idea of the work already performed, and still to be done, under the direction of General Donaldson and Major Whitman, may be formed from the following list of the principal national cemeteries in this military division, some of which are in progress, and some only in contemplation.

No.	Location.	Graves.	Remarks.
1	Chattanooga, Tennessee.....	10,000	In progress, nearly completed.
2	Stone river, Tennessee.....	6,000	In progress, nearly completed.
3	Knoxville, Tennessee.....	2,500	Finished.
4	Nashville, Tennessee.....	17,700	In contemplation.
5	Columbia, Tennessee.....	1,225	Finished.
6	Fort Donelson, Tennessee.....	2,500	In contemplation.
7	Shiloh, Tennessee.....	3,850	In contemplation.
8	Corinth, Mississippi.....	5,500	In contemplation.
9	Memphis, Tennessee.....	11,000	In contemplation.
10	Vicksburg, Mississippi.....	25,000	In contemplation.
11	Natchez, Mississippi.....	2,000	In contemplation.
12	Mobile, Alabama.....	3,000	In progress.
13	Montgomery, Alabama.....		In progress.
14	Savannah, Georgia.....	28,046	Completed.
15	Millen, Georgia.....		Completed.
16	Andersonville, Georgia.....		Completed.
17	Marietta, Georgia.....	4,250	In progress.
18	Louisville, Kentucky.....		In progress.
Total.....		122,571	

## XXII.—DEPARTMENT OF THE COLUMBIA.

1. In the department of the Columbia very little has been done, and very few and meagre reports from there have been received.

2. From only ten points in this department have reports been received.

3. The total number of bodies of United States soldiers reported as buried in the department of the Columbia is eighty-nine, (89.)

4. The number of the same which can probably be identified is thirty-seven, (37.)

5. The number of the same which cannot probably be identified is fifty-two, (52.)

6. No bodies are reported as reinterred to date of report.

7. The number of bodies which it is proposed to reinter hereafter is seventeen, (17.)

8. The estimated aggregate of expenditures on account of cemeteries and interments in this department to the 30th of June, 1866, is not reported.

9. The expenditures required for this purpose for the next fiscal year are not reported.

10. The average cost of reinterment of each body in this department is not reported.

## XXIII.—DEPARTMENT OF CALIFORNIA.

1. In the department of California, also, very little has been done.

2. From only fourteen points in this department have reports been received. San Francisco, California, has not been heard from, where a considerable number of United States soldiers are supposed to have been buried.

3. The total number of bodies of United States soldiers reported as buried in the department of California is eighty, (80.)
4. The number of the same which can probably be identified is thirty-eight, (38.)
5. The number of the same which cannot probably be identified is forty-two, (42.)
6. No bodies are reported as reinterred to date of report.
7. The number of bodies which it is proposed to reinter hereafter is two, (2.)
8. The estimated aggregate of expenditures on account of cemeteries and interments in this department, to the 30th of June, 1866, is not reported.
9. The expenditures required for this purpose for the next fiscal year are not reported.
10. The average cost of reinterment of each body in this department is not reported.

#### XXIV.—MILITARY DIVISION OF THE PACIFIC.

1. From the military division of the Pacific, containing the departments of the Columbia and of California, but few and meagre reports have been received. No report has been received from San Francisco, California, where it is supposed a considerable number of soldiers may have been buried.
2. Reports have been received from only ten points in the department of the Columbia, and from only fourteen in the department of California, making only twenty-four reports from the entire military division.
3. The total number of bodies of United States soldiers reported as buried in the military division of the Pacific is one hundred and sixty-nine, (169.)
4. The number of the same which can probably be identified is seventy-five, (75.)
5. The number of the same which cannot probably be identified is ninety-four, (94.)
6. No bodies are reported as having been reinterred to date of report.
7. The number of bodies which it is proposed to reinter hereafter is nineteen, (19.)
8. The estimated aggregate of expenditures on account of cemeteries and interments in this military division, to the 30th of June, 1866, is not reported.
9. The expenditures required for this purpose for the next fiscal year are not reported.
10. The average cost of reinterment of each body in this military division is not reported.

#### XXV.—GENERAL VIEW OF THE UNITED STATES.

1. Taking a connected view of the cemeterial operations throughout the United States, so far as reported, it will appear that there are now already forty-one (41) national cemeteries either located or established and in operation. They contain now one hundred and four thousand five hundred and twenty-eight (104,528) graves. Ten (10) more are to be established, and the whole number, fifty-one, (51,) are expected to contain two hundred and forty-nine thousand three hundred and ninety-seven (249,397) graves when finished.
2. A large number of United States soldiers are also buried in four hundred and twelve (412) local cemeteries scattered over the country.
3. The total number of Union soldiers reported as buried throughout the United States is three hundred and forty-one thousand six hundred and seventy, (341,670.)
4. The number of the same which can probably be identified is two hundred and two thousand seven hundred and sixty-one, (202,761,) or about three-fifths ( $\frac{3}{5}$ ) of the entire number.
5. The number of the same which cannot probably be identified is one hun-

dred and thirty-eight thousand nine hundred and nine, (138,909,) or about two-fifths ( $\frac{2}{5}$ ) of the entire number.

6. The number of bodies reported as reinterred up to date of report, June 30, 1866, is eighty-seven thousand six hundred and sixty-four, (87,664.)

7. The number of bodies which it is proposed to reinter hereafter is one hundred and thirty-five thousand eight hundred and eighty-one, (135,881.)

[The total number of bodies which will have been reinterred in all, thus appears to be two hundred and twenty-three thousand five hundred and forty-five, (223,545,) or about two-thirds ( $\frac{2}{3}$ ) of the entire number.]

8. The aggregate of expenditures, so far as reported, on account of cemeteries and interments, up to the 30th of June, 1866, is one million one hundred and forty-four thousand seven hundred and ninety-one dollars and sixty-one cents, (\$1,144,791 61.)

9. The expenditure required for this purpose for the next fiscal year is estimated at one million six hundred and nine thousand two hundred and ninety-four dollars and forty-eight cents, (\$1,609,294 48.)

10. The estimated aggregate amount of expenditures on account of cemeteries and interments, past and future, so far as reported, thus appears to be two million seven hundred and fifty-four thousand and eighty-six dollars and nine cents, (\$2,754,086 09,) or about eight dollars (\$8) to each body buried; and taking the average cost of reinterment at nine dollars and seventy-five cents (\$9 75) per body, as reported, or two million one hundred and eighty-nine thousand five hundred and sixty-three dollars and seventy-five cents (\$2,189,563 75) for the whole number of bodies which will have been reinterred, we have a balance of five hundred and sixty-four thousand five hundred and twenty-two dollars and thirty-four cents (\$564,522 34) for original interment of bodies, purchase of sites for national cemeteries, &c., &c.

11. A sheet containing the above information for each department and military division, and also for the whole country, stated in a tabular form, is herewith enclosed, marked A.

A schedule of the actual and estimated cost, so far as reported, of the various items entering into reinterments, is also enclosed in tabular form, marked B.

12. The following table shows the expenditures of the quartermaster's department, charged to burial expenses, up to the 30th of June, 1865, as given in the annual reports of the Quartermaster General:

For the year ending—	Amount.	See report of Quartermaster General for—	
June 30, 1861.....	\$1,519 22	1861 .....	Page 2
June 30, 1862.....	11,498 64	1862 .....	3
June 30, 1863.....	87,272 75	1863 .....	3
June 30, 1864.....	271,642 77	1864 .....	3
June 30, 1865.....	128,940 12	1865 .....	43
Total .....	500,873 50		

If the expenditures of the last fiscal year may be supposed to have somewhat exceeded the sum of those of the five years preceding, it would bring the amount up to what we have reported above, paragraph 8, namely: one million one hundred and forty-four thousand seven hundred and ninety-one dollars and sixty-one cents, (\$1,144,791 61.)

But it is supposed that the amount charged to burial expenses does not always include many important items, such as lumber, labor, &c., which are charged in the Quartermaster General's report under other heads, so that the above disproportion between the expenditures of the last fiscal year, and that of the previous one would be considerably reduced.

13. An unofficial statement, quoted from the Washington correspondence of

the Chicago Tribune by the Washington Chronicle of May 7, 1866, puts the total casualties, in action, from wounds, and from disease, in the service, at two hundred and eighty thousand four hundred and eighty, (280,480.) This does not include those who died in private life from wounds or disease contracted in the service. The same article states the aggregate number of men furnished under all calls, reduced to the three years' standard, at two million one hundred and fifty-four thousand three hundred and eleven, (2,154,311.)

14. With regard to rebel prisoners of war interred in the northern States, the reports received contain very little information. It is reported that there are four hundred and eighty-five interred in Cypress Hill cemetery, near New York city, in the department of the east. 10,499 are reported as buried in the department of the Ohio, in the following cemeteries, viz :

1. Johnson's island, Ohio, containing.....	208	rebel graves.
2. Columbus, Ohio, containing.....	2, 000	"
3. Indianapolis, Indiana, containing.....	1, 573	"
4. Camp Butler, Illinois, containing.....	614	"
5. Rock island, Illinois, containing.....	1, 960	"
6. Chicago, Illinois, containing.....	4, 105	"
7. Camp Dennison, Ohio, containing.....	38	"
8. Madison, Indiana, containing.....	1	"
Total.....	10, 499	"

A report received on the 29th of August, 1866, from Captain John C. Woods, assistant quartermaster, St. Louis, Missouri, states that there are, besides these, 2,673 rebel prisoners of war interred at Alton, Illinois, which is attached to the department of the Missouri.

This makes reported, in all:

1. Department of the east.....	485	rebel prisoners.
2. Department of the Ohio.....	10, 499	"
3. Department of the Missouri.....	2, 673	"
Total reported.....	13, 657	"

The official report of the commissary general of prisoners, made in reply to a resolution of Congress, as quoted in the Petersburg Index, gives the whole number of rebel prisoners of war who died in northern prisons as 26,436.

15. Rolls of honor, or lists of the names of those dead soldiers of the Union whose remains have been identified, have been published thus far to the number of six volumes, and containing about 32,666 names, as follows, viz :

Number.	For the national cemetery at—	No. of General Orders, Quartermaster General's office.	Names contained, about—
1	Washington, D. C.....	No. 35, 1865...	11, 250
2	Wilderness and Spottsylvania Court-house, Virginia....	No. 58, 1865...	750
3	Andersonville, Georgia.....	No. 69½, 1865...	12, 920
4	Alexandria, Virginia.....	No. 10, 1866...	3, 601
5	Fortress Monroe and Hampton, Virginia.....	No. 31, 1866...	2, 655
6	Department of Texas.....	No. 32, 1866...	1, 490
	Total.....	.....	32, 666

The work of preparing these rolls is still going on in the office of Brevet Lieutenant Colonel James M. Moore, assistant quartermaster United States army, and also for the military division of the Tennessee, at Nashville, under the charge of Brevet Major General J. L. Donaldson, chief quartermaster.

16. The improvements prescribed by General Orders No. 13, of February 13, 1866, appear sufficient, and I am not prepared to recommend any addition to or deviation from them, unless it be in regard to headboards. Public opinion seems to be turning in the direction of a more permanent mode of marking the graves than by wooden headboards, and I would respectfully give it as my opinion that the sentiment of the nation will not only sustain the expense of marble or other permanent memorials, but, moreover, that it will be likely to demand it in a few years, if not now established. I also am of opinion, taking into account the difficulty of renewing the wooden memorials in time of peace, when neither officers, troops, nor laborers will be available on the spot, that a permanent material, say stone or iron, for marking the graves, will be found the cheapest way of keeping them satisfactorily marked. The subject is now before you on the reports of sundry subordinate officers of the department.

17. In conclusion, regarding the whole work of concentrating, enclosing, marking, and recording the graves of Union soldiers and rebel prisoners of war, it will appear that as much has been accomplished as the late period when the work was commenced would allow. The work has been, in large part, suspended throughout the States lately in rebellion, since the first of May, and will not be resumed there until the 1st of October, but the interval has been well improved in deciding upon the questions of removal, in examining and purchasing sites, in procuring materials, and, in general, in making the necessary preparations for pushing the work with vigor when cold weather arrives. In this connection I would again call attention to the indefatigable and well-directed exertions of Brevet Major General J. L. Donaldson, chief quartermaster of the military division of the Tennessee. Assisted by his able subordinates, and under the fostering care of Major General George H. Thomas, General Donaldson has placed his military division, and especially the department of Tennessee, in a far more forward condition, as regards cemeteries, than any other portion of the United States, unless it be the departments of Washington and Virginia; and this notwithstanding the natural difficulties have been far greater than in any other section.

I cannot close this report without commending to your favorable notice Brevet Major C. W. Folsom, assistant quartermaster volunteers, who has had special charge in this division, of the subject of cemeteries, to whose industry and peculiar adaptability to the work this office is indebted for the collation of materials and their lucid arrangement in this report. The correspondence in connection with the subject of cemeteries during the past six months has been very voluminous, while the analysis of reports has required much labor, and I consider that the office has been fortunate in having the benefit of the valuable assistance of an officer so well fitted by education and experience for the duties assigned him.

I have the honor to be, general, very respectfully, your obedient servant,

J. J. DANA,

*Colonel Quartermaster's Department, Bvt. Brig. Gen'l U. S. A.*

Brevet Major General M. C. MEIGS,

*Quartermaster General, U. S. A., Washington, D. C.*

## A.—Tabular statement of cemeterial operations for the fiscal

Running number.	Name of department.	No. of national cemeteries now established.	No. of national cemeteries to be established.	No. of bodies of Union soldiers now in national cemeteries.	No. of bodies of Union soldiers expected finally to be in national cemeteries.	No. of cemeteries other than national.	No. of bodies of Union soldiers now in places other than national cemeteries.
1	The East.....	1		298	298	44	5,200
2	Middle.....	2		7,512	7,512	12	9,420
3	Virginia.....						
4	The Carolinas.....					25	17,885
5	Total in military division of the Atlantic.....	3		7,810	7,810	91	32,565
6a	Washington, (Colonel M. I. Ludington, c. q. m.).....	3		3,210	3,210		2,077
6b	Washington depot, (Colonel J. M. Moore, n. q. m.).....	17	2	38,143	97,511	3	61,857
6	Total in department of Washington.....	20	2	41,353	100,721	3	63,934
7	The Ohio.....	5		7,029	8,944	37	5,716
8	The Missouri.....	1		3,613	3,613	16	7,064
9	The Platte.....					19	1,394
10	Arkansas.....	2		5,236	5,738	13	6,391
11	Total in military division of the Mississippi.....	8		15,880	18,295	85	20,565
12	Louisiana.....					16	31,500
13	Texas.....					17	1,529
14	Florida.....					10	1,178
15	Total in military division of the Gulf.....					43	34,207
16	Tennessee.....	3	5	18,500	54,775	46	42,622
17	Kentucky.....	1		2,176	3,126	57	15,596
18	Georgia.....	4		18,054	30,554	7	9,446
19	Alabama.....	2		755	1,616	13	978
20	Mississippi.....		3		32,500	50	11,000
21	Total in military division of the Tennessee.....	10	8	39,485	122,571	173	85,702
22	The Columbia.....					2	39
23	California.....					9	80
24	Total in military division of the Pacific.....					17	169
25	Total in the United States.....	41	10	104,528	249,397	412	237,142

\* 21,500 of these bodies will be taken from other departments.

† These expenditures were made at St. Louis only.



year ending June 30, 1866, so far as reported.

No. of bodies of Union soldiers which can be identified.	No. of bodies of Union soldiers which cannot be identified.	Total No. of bodies of Union soldiers in department.	Total No. of bodies of rebel prisoners of war in department.	No. of bodies reinterred up to June 30, 1866.	No. of bodies proposed to be reinterred hereafter.	Total No. of bodies which will have been reinterred in all.	Aggregate of expenditures reported to date.		
							Materials.	Labor.	Total.
4,744	754	5,498	485	.....	306	306	Not reported.	Not reported.	Not reported.
8,785	8,207	16,992	.....	3,962	5,267	9,229	Not reported.	Not reported.	Not reported.
8,062	9,823	17,885	.....	.....	474	474	Not reported.	Not reported.	Not reported.
21,591	18,784	40,375	485	3,962	6,047	10,009	Not reported.	Not reported.	Not reported.
4,180	1,107	5,287	.....	2,127	3,160	5,287	\$11,500 00	\$9,500 00	\$21,000 00
46,000	54,000	100,000	.....	52,006	47,994	100,000	.....	.....	850,000 00
50,180	55,107	105,287	.....	54,133	51,154	105,287	11,500 00	9,500 00	871,000 00
9,582	3,163	12,745	10,499	655	4,978	5,633	.....	.....	106,315 00
8,855	1,822	10,677	2,673	.....	431	431	52,221 32	49,524 29	†101,745 61
1,206	188	1,394	.....	.....	11	11	Not reported.	Not reported.	Not reported.
6,492	5,137	11,629	.....	2	2,572	2,574	.....	.....	4,325 00
26,135	10,310	36,445	13,172	657	7,992	8,649	52,221 32	49,524 29	212,385 61
20,000	11,500	31,500	.....	.....	1,500	1,500	Not reported.	Not reported.	Not reported.
1,325	204	1,529	.....	.....	.....	.....	3,250 00	1,825 00	5,075 00
370	808	1,178	.....	.....	412	412	Not reported.	Not reported.	Not reported.
21,695	12,512	34,207	.....	.....	†1,912	†1,912	3,250 00	1,825 00	5,075 00
50,839	16,343	67,182	.....	15,664	41,276	56,940	16,650 00	32,250 00	48,900 00
12,000	5,772	17,772	.....	46	3,120	3,166	.....	.....	1,561 00
15,000	12,500	27,500	.....	12,912	12,500	25,412	.....	.....	§1,500 00
1,246	487	1,733	.....	290	861	1,151	2,990 00	930 00	3,920 00
4,000	7,000	11,000	.....	.....	11,000	11,000	150 00	300 00	450 00
83,065	42,102	125,187	.....	28,912	68,757	97,669	19,790 00	33,480 00	56,331 00
37	52	89	.....	.....	17	17	.....	Not reported.	Not reported.
38	42	80	.....	.....	2	2	.....	Not reported.	Not reported.
75	94	169	.....	.....	19	19	.....	Not reported.	Not reported.
202,761	138,909	341,670	13,657	87,664	135,881	223,545	86,761 32	94,329 29	1,144,791 61

† Exclusive of those to be carried out of the military division.

§ Not including expenditures made at Andersonville.

*Tabular statement of cemeterial*

Running number.	Name of department.	Estimate of expenditures for next fiscal year, ending June 30, 1867.			Aggregate amount of expenditures reported, past and future.
		Materials.	Labor.	Total.	
1	The East.....	Not reported.	Not reported.	Not reported.	Not reported.
2	Middle.....	Not reported.	Not reported.	Not reported.	Not reported.
3	Virginia.....				
4	The Carolinas.....	Not reported.	Not reported.	Not reported.	Not reported.
5	Total in military division of the Atlantic..	Not reported.	Not reported.	Not reported.	Not reported.
6a	Washington, (Col. M. I. Ludington, c.q.m.)			\$30,000 00	\$51,000 00
6b	Washington depot, (Col. J. M. Moore, a.q.m.)			400,000 00	1,250,000 00
6	Total in department of Washington.....			430,000 00	1,301,000 00
7	The Ohio.....			15,263 00	121,578 00
8	The Missouri.....	Not reported.	Not reported.	Not reported.	101,745 61
9	The Platte.....	Not reported.	Not reported.	Not reported.	Not reported.
10	Arkansas.....			12,881 48	17,206 46
11	Total in military division of the Mississippi.			28,144 48	240,530 09
12	Louisiana.....			20,000 00	20,000 00
13	Texas.....			3,000 00	2,075 00
14	Florida.....	Not reported.	Not reported.	Not reported.	Not reported.
15	Total in military division of the Gulf.....			23,000 00	28,075 00
16	Tennessee.....	\$408,236 00	\$569,512 00	977,748 00	1,026,648 00
17	Kentucky.....			81,870 00	83,431 00
18	Georgia.....	Not reported.	Not reported.	Not reported.	1,500 00
19	Alabama.....			13,532 00	17,452 00
20	Mississippi.....			55,000 00	55,450 00
21	Total in military division of the Tennessee.	408,236 00	569,512 00	1,128,150 00	1,184,481 00
22	The Columbia.....	Not reported.	Not reported.	Not reported.	Not reported.
23	California.....	Not reported.	Not reported.	Not reported.	Not reported.
24	Total in military division of the Pacific....	Not reported.	Not reported.	Not reported.	Not reported.
25	Total in the United States.....	408,236 00	569,512 00	1,609,294 48	2,754,086 09

operations, &c.—Continued.

Average cost of reinterment of each body.						Remarks.
Coffin.	Labor.	Headboard.	Fencing.	Transportation	Total.	
.....	.....	.....	.....	.....	.....	Reports incomplete.
.....	.....	.....	.....	.....	.....	Reports incomplete.
.....	.....	.....	.....	.....	.....	The details of the department of Virginia will be found reported under the "Depot of Washington, 6b."
.....	.....	.....	.....	.....	\$11 00	Reports incomplete.
.....	.....	.....	.....	.....	.....	Reports incomplete.
\$3 40	\$3 40	\$0 90	\$0 35	\$0 95	9 00	
2 50	3 25	1 25	25	75	8 00	
2 95	3 33	1 08	30	85	8 50	
.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	5 66	
4 50	6 00	1 50	.....	.....	12 00	Reports incomplete.
3 35	6 20	1 45	.....	.....	11 00	Reports incomplete.
3 93	6 10	1 48	.....	.....	9 55	
.....	.....	.....	.....	.....	.....	
3 00	6 00	1 00	.....	.....	10 00	Proposed reinterments and estimated expenditure for same for next fiscal year, principally included in military division of the Tennessee.
.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	
3 00	6 00	1 00	.....	.....	10 00	
.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	9 14	
6 00	3 00	1 50	1 00	3 00	14 50	
.....	.....	.....	.....	.....	13 50	
5 00	3 00	1 50	.....	4 00	13 50	
2 75	38	50	45	.....	4 08	
4 58	2 13	1 17	73	3 50	10 94	
.....	.....	.....	.....	.....	.....	
.....	.....	.....	.....	.....	.....	Very few reports received.
.....	.....	.....	.....	.....	.....	Very few reports received.
.....	.....	.....	.....	.....	.....	Very few reports received.
3 62	4 39	1 18	51	2 18	9 75	

J. J. DANA,  
Colonel Q. M. Department, Brevet Brigadier General U. S. A.  
SIXTH DIVISION QUARTERMASTER GENERAL'S OFFICE, September 6, 1866.

B.—Schedule of actual, or contracted, or estimated cost of the various items connected with the disinterment and removal of the remains of deceased soldiers in various sections of the United States.

Items.	Depot of Washington, Col. J. M. Moore, A. Q. M., July, 1866.	Department of Washington, Col. M. I. Ludington, C. Q. M., July, 1866.	Military division of the Tennessee, Gen. J. L. Donaldson, C. Q. M., May, 1866.	Jeffersonville, Ind., Capt. J. H. Belcher, A. Q. M., March, 1866.	Murfreesboro, Tenn., Major E. B. Whitman, A. Q. M., July, 1866.	Chicago, Ill., Capt. N. Plato, A. Q. M., October, 1865.	Knoxville, Tenn., Capt. M. A. Walnwright, A. Q. M., May, 1866.	Chattanooga, Tenn., 1866.	Gallipolis, Ohio, 1866.	Nashville, Tenn., May, 1866.†	Columbia, Tenn., May, 1866.	Cold Harbor, Va., Col. J. M. Moore, A. Q. M., March, 1866.	Gettysburg battle-field, (items b, c, d, and i.) October, 1863.	Average cost United States.
1. Cost of picket fence, per running foot.....	\$0 41½	\$0 60	\$0 60½	\$0 90	\$1 09	\$0 30	\$0 75*		\$0 60		\$0 42			\$0 50
2. Cost of headboards, each.....	1 20	90	2 50						1 25					1 23
3. Setting headboards, each.....	10		3 00											10
4. Cost of coffin.....	4 00	3 40												3 46
5. Cost of plain box.....	1 50	3 40	1 50											2 13
6. Cost of removal per body:														
a Fencing.....	25	35	75											45
b Disinterring.....	Lab'r 1 50	1 00										\$0 75		1 00
c Digging grave.....		1 00	25									1 00		1 00
d Filling grave.....														
e Coffin.....	2 50	3 40	3 00					\$4 50						3 50
f Rough box.....			(1 50)					2 00				1 50		(1 66)
g Transportation by rail.....		45	1 00											90
h Clerk-hire, maintenance of animals, &c.....		1 10	30											75
i Transportation by wagons.....	75	50	1 00											1 00
j Transportation by wagons.....	1 25	30	20											35
k Grading roads, paths, &c.....	50	90	2 50											1 55
l Headboards.....	1 25													
Total cost of removal.....	8 00	9 00	9 00									3 25	\$1 59	9 00 to 10 50

\* By contract.

† Estimate.

‡ In government shops.

§ From a distance of five miles, \$8; from a distance of ten miles, \$9; from a distance of fifteen miles, \$10.

J. J. DANA, Colonel Q. M. Dept. Brevel Brigadier General U. S. A.

SIXTH DIVISION QUARTERMASTER GENERAL'S OFFICE, September 6, 1866.

C.

[Circular.]

QUARTERMASTER GENERAL'S OFFICE,  
Washington, D. C., June 13, 1865.

Chief Quartermaster of the ——— :

SIR: With a view to presenting a general record of the operations connected with the burial of Union soldiers throughout the United States for the current fiscal year, you are requested to forward to this office, by or before July 15th proximo, a brief report of cemeterial operations in the department ———, up to the 30th instant, in the following form, viz:

1. Number of national cemeteries, with name, location, and approximate number of bodies in each, at date of report: also, final number expected to be in each when done.
2. Number of cemeteries other than national, with aggregate number of bodies in the same.
3. Total number of bodies of United States soldiers supposed to be buried in the department ———.
4. Number of the same which can probably be identified.
5. Number of the same which cannot probably be identified.
6. Number of bodies reinterred to date of report.
7. Number of bodies proposed to be reinterred hereafter
8. Estimated aggregate expenditures on account of cemeteries and internments to 30th instant, separating labor from materials so far as can be done.
9. Estimate of expenditures required for this purpose for the next fiscal year.
10. Average cost of reinterment of each body, with average cost of items, such as coffin, labor, headboards, fencing, &c., &c.
11. Any other remarks, statistics, or concise information which may be useful in giving a general view of the work done, and that yet to be accomplished.

Exactness of figures is not so much desired as an early report: which, to be of use, must be forwarded certainly not later than the time above named.

Very respectfully, your obedient servant,

By order of the Quartermaster General:

Colonel Q. M. Dep't, Brexet Brigadier General U. S. A.

NOTE.—This report is not intended to supersede or interfere in any way with the usual annual report of operations from officers of the quartermaster's department.

## REPORT OF THE SECRETARY OF WAR.

D.—List of national cemeteries in the neighborhood of Washington, D. C., and in Virginia, under the charge of Brevet Lieutenant Colonel J. M. Moore, assistant quartermaster U. S. A., with dates of commencement and completion, number of workmen, &c., employed, number of bodies in the same, number removed during the fiscal year ending June 30, 1866, &c.

Running number.	Name of cemetery.	Date of commencement of work on cemetery.	Date of completion of work on cemetery.	Whether or not now open for use.	Approximate No. of men employed at each cemetery during construction.	Approximate No. of teams employed at each cemetery during construction.	Approximate number of bodies in each cemetery at date.	Approximate number of bodies removed to each cemetery during the fiscal year ending June 30, 1866.	Approximate number of bodies removed in one day, averaged.
1	U. S. Military Asylum Cemetery, D. C.	Prior to July 1, 1865.	Prior to July 1, 1865.	Closed.....	6	1	5,717	.....	.....
2	Harmony.....do.....do.	do.....do.....do.	do.....do.....do.	Open.....	3	1	3,251	287	.....
3	Battle.....do.....do.	do.....do.....do.	do.....do.....do.	Closed.....	2	1	40	.....	.....
4	Union.....do.....do.	do.....do.....do.	do.....do.....do.	Closed.....	10	2	1,012	.....	.....
5	Arlington.....do.....do.	do.....do.....do.	do.....do.....do.	Open.....	120	20	9,795	3,732	.....
6	Hampton.....do.....do.	May 20, 1866.....	In course of construct'n.	.....	20	10	3,141	3,141	.....
7	Belle Isle.....do.....do.	February 7, 1866.....	February 15, 1866.....	.....	30	4	155	155	.....
8	Cold Harbor.....do.....do.	February 15, 1866.....	April 30, 1866.....	.....	53	6	1,930	1,930	.....
9	Seven Pines.....do.....do.	May 1, 1866.....	June 27, 1866.....	.....	63	6	1,335	1,335	.....
10	Glendale.....do.....do.	May 7, 1866.....	In course of construct'n.	.....	98	10	1,077	1,077	.....
11	Fort Harrison.....do.....do.	May 10, 1866.....	do.....do.....do.	.....	57	2	746	746	.....
12	Fredericksburg.....do.....do.	June 1, 1866.....	do.....do.....do.	.....	25	4	2,442	2,442	.....
13	Ball's Bluff.....do.....do.	December 16, 1865.....	December 27, 1865.....	.....	69	10	54	54	.....
14	Winchester.....do.....do.	April 10, 1866.....	In course of construct'n.	.....	196	17	3,400	3,400	.....
15	Hollywood.....do.....do.	January 17, 1866.....	January 27, 1866.....	.....	30	2	237	237	.....
16	Oakwood.....do.....do.	January 28, 1866.....	February 7, 1866.....	.....	30	2	210	210	.....
17	Alexandria*.....do.....do.	Prior to July 1, 1865.....	Prior to July 1, 1865.....	.....	.....	.....	3,601	.....	.....
	Total.....	.....	.....	.....	872	104	38,113	18,746	65

\* Under charge of Brevet Lieut. Colonel J. G. Lee, A. Q. M., U. S. A.

SIXTH DIVISION QUARTERMASTER GENERAL'S OFFICE, September 6, 1866.

J. J. DANA, Colonel Q. M. Dept., Brevet Brigadier General U. S. A.



## E.

*Extract from a report of Captain E. R. Whitman, assistant quartermaster, on cemeteries in the district of Middle Tennessee, dated Murfreesboro', Tennessee, December 1, 1865.—[Cemeterial Reports, No. 33.]*

9th. On the line of the Nashville and Chattanooga railroad, and about two (2) miles west of Murfreesboro', there is a small and neat cemetery containing twenty nine (29) bodies of privates from Hazen's brigade, viz: First Ohio volunteer artillery, forty-first Ohio volunteer infantry, sixth Kentucky volunteer infantry, ninth Indiana volunteer infantry, and one hundred and tenth Illinois volunteer infantry. The lot is forty (40) by one hundred (100) feet, and is enclosed by a substantial wall of hewn stone, four (4) feet in height, and two (2) feet in thickness. Each of the graves has a neat headstone of cut limestone, bearing the name, rank and regiment of the soldier buried beneath it. In the centre of the enclosure there is built a substantial and tasteful monument of hewn limestone, in the form of a quadrangular pyramidal shaft, ten feet square at the base and eleven feet in height, surmounted by a neat coping. The several sides bear the following inscriptions, viz:

(1.—*South face.*)

## HAZEN'S BRIGADE.

To the memory of its soldiers who fell at Stone river, December 31, 1862. "Their faces towards heaven, their feet to the foe."

(2.—*West face.*)

The blood of one-third of its soldiers, twice spilled in Tennessee, crimson the battle-flag of the brigade and inspires to greater deeds. Lieutenant Colonel George T. Cotton, sixth Kentucky volunteers; Captain Charles S. Todd, sixth Kentucky volunteers; Captain Isaac M. Pettit, ninth Indiana volunteers; First Lieutenant Calvin Hart, forty-first Ohio volunteers; Second Lieutenant Henry Kessler, ninth Indiana volunteers; Second Lieutenant Jesse C. Payne, one hundred and tenth Illinois volunteers. Killed at Stone river, December 31, 1862.

(3.—*North face.*)

Erected in 1863 upon the ground where they fell, by their comrades of the forty-first infantry Ohio volunteers; Lieutenant Colonel A. Wiley, sixth Kentucky volunteers; Colonel W. C. Whittaker, ninth Indiana volunteers; Colonel W. H. Black, one hundred and tenth Illinois volunteers; Colonel T. S. Casey, Cockerill's battery F, first Ohio volunteer artillery, nineteenth brigade Buell's army of the Ohio; Colonel Wm. B. Hazen, forty-first infantry Ohio volunteers, commanding.

(4.—*East face.*)

The veterans of Shiloh have left their deathless heritage of fame on the field of Stone river. Captain James Houghton, ninth Indiana volunteers; First Lieutenant and Adjutant T. J. Patton, ninth Indiana volunteers; First Lieutenant Joseph Turner, ninth Indiana volunteers; First Lieutenant Franklin E. Pancoast, forty-first Ohio volunteers; Second Lieutenant Chauncey H. Talcott, forty-first Ohio volunteers; Second Lieutenant Anton Hund, sixth Kentucky volunteers. Killed at Shiloh, April 7, 1862.

E. B. WHITMAN,

*Captain and Chief Quartermaster of the Dist. of Mid. Tennessee.*

A true copy:

J. J. DANA,

*Colonel Quartermaster's Dep't, Brevet Brigadier General U. S. A.*

No. 11.

SEVENTH AND NINTH DIVISIONS—MILITARY TRAINS, &c.

QUARTERMASTER GENERAL'S OFFICE,

*Washington, D. C., October 6, 1866.*

GENERAL: I have the honor to submit herewith a statement of the number and amount of claims received, acted upon, and remaining on hand in the seventh division of this office during the fiscal year ending June 30, 1866:

*Statement.*

Classes.	Presented.		Approved.		Rejected.		Waiting action.	
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.
Deceased cases .....	378	\$26,074 15	249	\$23,619 33	107	\$1,684 90	22	\$789 92
Under act of July 4, 1864.....	137	137,937 72	11	338 65	126	137,599 07	.....	.....
Cotton claims.....	20	267,405 65	.....	.....	20	267,405 65	.....	.....
Miscellaneous.....	4,133	1,093,029 38	1,577	258,354 44	1,693	738,812 56	863	95,862 38
Total .....	4,668	1,524,446 90	1,837	282,312 42	1,946	1,145,502 18	885	96,632 30

I have the honor to be, with great respect, your obedient servant,

BENJAMIN C. CARD,

*Colonel Q. M. Dep't, Bvt. Brig. Gen.,*

*in charge Seventh Div. Q. M. General's Office.*

Bvt. Maj. Gen. M. C. MEIGS, U. S. A.,

*Quartermaster General.*

QUARTERMASTER GENERAL'S OFFICE,  
*Washington, D. C., October 20, 1866.*

GENERAL: I have the honor to submit herewith a statement of the number and amount of claims received, acted upon, and remaining on hand in the seventh division of this office from July 1 to September 30, 1866:

Class.	Presented.		Approved.		Rejected.		Awaiting action.	
	No.	Amount.	No.	Amount.	No.	Amount.	No.	Amount.
Deceased cases.....	29	\$1,581 83	16	\$913 48	10	\$527 28	3	\$141 07
Cases under act of July 4, 1864.....	22	21,208 73	1	48 00	21	21,160 73	.....	.....
Cotton claims.....	2	87,000 00	.....	.....	2	87,000 00	.....	.....
Miscellaneous.....	990	119,059 29	325	23,168 04	610	86,156 91	55	9,734 34
Total .....	1,043	228,849 85	312	24,129 52	643	194,844 92	58	9,875 41

I am, general, with great respect, your obedient servant,

BENJAMIN C. CARD,

*Colonel Q. M. Dep't, Bvt. Brig. Gen. U. S. A.,*

*in charge Seventh division Q. M. General's Office.*

Bvt. Maj. Gen. M. C. MEIGS, U. S. A.,

*Quartermaster General, Washington, D. C.*

No. 12.

QUARTERMASTER GENERAL'S OFFICE,  
*Washington, D. C., October 9, 1866.*

GENERAL: I have the honor to submit herewith, a report of the wagons, ambulances, carts, harness, &c., pertaining to the United States quarter-

master department, purchased, fabricated, captured, sold, and expended during the fiscal year ending on the 30th of June, 1866, so far as shown by the reports received at this office to the 8th instant.

I am, with great respect, your obedient servant,  
BENJAMIN C. CARD,  
Colonel Q. M. Dept. and Brevet Brig. Gen'l U. S. A.  
Brevet Major General M. C. MEIGS, U. S. A.,  
Quartermaster General.

*Report of wagons, ambulances, carts, harness, &c., pertaining to the United States quartermaster's department, purchased, fabricated, captured, sold, and expended during the fiscal year ending on the 30th of June, 1866, as shown by reports received at the Quartermaster General's office up to the 8th of October, 1866.*

How received or expended.	Army wagons.	Two-horse wagons.	Spring wagons.	Irregular wagons.	Ambulances.	Carts, hand.	Carts, horse.
	No.	No.	No.	No.	No.	No.	No.
Purchased .....	3	.....	6	.....	4	8	6
Fabricated .....	35	.....	11	2	4	.....	7
Captured, &c. ....	381	132	69	164	52	.....	59
Sold, expended, &c. ....	12,534	1,457	441	1,459	3,432	63	1,751

How received or expended.	Carriages.	Wheel harness.	Lead harness.	Irregular harness.	Artillery harness.	Cart harness.	Travelling forges.	Portable forges.
	No.	S. sets.	S. sets.	S. sets.	S. sets.	S. sets.	No.	No.
Purchased .....	.....	274	577	.....	.....	14	.....	3
Fabricated .....	.....	5,856	4,394	.....	.....	8	.....	.....
Captured, &c. ....	2	1,331	1,447	1,812	4	33	15	75
Sold, expended, &c. ....	4	51,509	56,182	3,090	486	1,340	32	788

BENJAMIN C. CARD,  
Colonel Quartermaster's Department,  
Brevet Brig. Gen. U. S. A., in charge of Seventh and Ninth Divisions.  
QUARTERMASTER GENERAL'S OFFICE, October 9, 1866.

No. 13.

## EIGHTH DIVISION—INSPECTION.

CINCINNATI, OHIO, *October 12, 1866.*

GENERAL: I have the honor to submit the following report of the operations of the inspection (eighth) division, Quartermaster General's office, for the fiscal year ending June 30, 1866.

I was temporarily absent from Washington on inspection duty in the west at the commencement of the fiscal year, as stated in my last report.

Colonel J. D. Bingham, inspector, quartermaster's department, was at that time in charge of the inspection division. He thus remained until my return on the 20th of August, 1865, when I resumed charge of the division and thus continued until the 24th of September, when I entered upon inspection duty in Maine, New Hampshire, Vermont, Connecticut, and New York, returning to Washington on the 8th of October.

On the 14th of December, 1865, I was directed by the Quartermaster General to make inspections at Wheeling, West Virginia; Louisville, Kentucky, and St. Louis, Missouri; and in accordance therewith left Washington on the 20th of December, 1865, returning on or about the 9th of January, 1866.

On the 23d and 24th of February, 1866, I made inspections of Harper's Ferry, Virginia, and Baltimore, Maryland.

On the 13th of March, 1866, I was directed by the Quartermaster General to make a general tour of inspection through the west, and for that purpose left Washington on the 19th of March, visiting Chicago, Illinois; St. Louis, Missouri; Indianapolis, Indiana; Louisville, Kentucky; Cincinnati, Ohio, and Pittsburg, Pennsylvania, returning to my station on the 10th of April, 1866.

On the 24th of April I inspected the quartermaster's department at Baltimore, Maryland.

By Special Orders No. 227, Adjutant General's Office, May 14, 1866, I was granted sixty (60) days' leave of absence, and accordingly left Washington on the 17th of May.

On the expiration of my leave, under orders from the Quartermaster General dated the 7th and 10th of July, 1866, I made inspections at Cincinnati and Columbus, Ohio; Detroit, Michigan; Chicago, Illinois; Springfield, Illinois; and Indianapolis, Indiana.

On the 27th of July I was ordered by the Quartermaster General to make certain investigations in New York city, after which I inspected the post at Portland, Maine, and returning to Washington on the 6th of September, resumed charge of the inspection division.

On the 22d of September, 1866, I was ordered by the Quartermaster General to enter upon special duty at Cincinnati, Ohio, at which post I am now temporarily on duty.

During the fiscal year I have forwarded to the Quartermaster General reports of forty-three (43) inspections and investigations, and since July, 1866, eleven (11) have been added to the number, making a total of fifty-four, (54.)

While absent from my station on inspection duty, Brevet Major H. A. Royce, assistant quartermaster United States volunteers, has been placed in charge of the inspection division.

The following summary will show the duties upon which the regularly assigned inspectors of the quartermaster's department and other officers detailed upon inspection duty in the department have been engaged since the commencement of the fiscal year.

In connection with reductions in the department, the breaking up and aban-

donment of military posts, their duties have been numerous and of the greatest importance.

As before stated, Brevet Brigadier General J. D. Bingham at the commencement of the fiscal year was in temporary charge of the inspection division, so remaining until my return to Washington on the 20th of August, 1865.

On the 23d of August, 1865, he was ordered by the Quartermaster General to make investigations at Boston, Massachusetts, on which duty he was engaged until the 8th of September, when directed by telegraph to return to Washington as a witness on a general court-martial.

On the 11th of September he entered upon inspection duty at Portland, Maine, then at Boston, Massachusetts, and New York city.

On the 24th of September, 1865, was directed to report to the Quartermaster General, by whom, on the 27th of September, he was assigned in charge of the seventh and ninth divisions of the Quartermaster General's office during the temporary absence of Brevet Brigadier General B. C. Card, chief of the ninth division. He remained on duty until the 11th October, when he was ordered to continue certain investigations, which caused him to visit Bennington and Burlington, Vermont, and Montreal, Canada. He entered upon inspections at various posts in the State of New York, and at Trenton, New Jersey, with a view to reductions, sales, &c., returning to Washington, D. C., on the 19th of November, 1865. On the 20th of November, 1865, he entered upon investigations at Louisville, Kentucky. Hethen, in accordance with Special Orders No. 74, Quartermaster General's Office, November 27, 1865, reported to Major General Sherman, commanding military division of the Mississippi, at St. Louis, on December 14, 1865, for duty on his staff, and was engaged on inspections in that division at St. Louis, Forts Leavenworth, Riley, &c., until February 16, 1866, when directed by the Quartermaster General to make further investigations at Louisville, where he arrived on the 19th of February. On the 15th of March, having completed his investigations, he returned to St. Louis, and on the 22d of March, 1866, entered upon inspections at Keokuk, Iowa. During May and June, 1866, he accompanied Major General W. T. Sherman on a tour of inspection to Forts Riley and Kearney, Omaha, Sioux City, Forts Ridgely and Snelling, and the lake frontier, returning to St. Louis on the 20th of June, 1866. He was then engaged in inspection of property at St. Louis. On the 18th of August, 1866, he was ordered by the Quartermaster General to make investigations at Chattanooga, Tennessee. The result of his investigations was reported on the 14th September, 1866. Since then he has been engaged upon inspections in Minnesota.

During the fiscal year he transmitted to this office reports of twenty-three inspections and investigations, and, since the conclusion of the fiscal year, one voluminous report on affairs at Chattanooga. These are exclusive of such reports as may have been made by him to Lieutenant General Sherman, and not forwarded to the Quartermaster General's office. The duties performed by General Bingham have been most important, difficult, and delicate, but have been performed in a highly faithful and creditable manner. His valuable services have been acknowledged by yourself in recommending him for, and by the honorable Secretary of War in conferring upon him, the brevet of brigadier general United States army.

At the commencement of the fiscal year Colonel J. D. Cruttenden, inspector of the quartermaster's department, was on inspection duty at St. Louis, thenceforward at St. Louis and Louisville, and depots and posts in the department of Kentucky, which occupied him until the 29th August, when granted fifteen days' leave of absence.

On the 22d day of September, 1865, he was directed to make inspections in the district of the Plains and at Camp Douglas, Utah Territory, and on the 24th October, 1865, to make certain investigations at Forts Smith and Gibson, and in

Kansas. He was engaged in these duties until the 25th April, 1866, when he reported his return to St. Louis. From the 18th May, 1866, to the 20th September, 1866, he was engaged upon special duty at Little Rock, Arkansas. He was then ordered to make certain investigations at Memphis, Tennessee, and upon this duty he is now engaged. The total number of reports received from him during the fiscal year were thirteen, and since the close of said year three. Colonel Cruttenden has endeavored to discharge his duties faithfully and energetically. Some of his inspections have been difficult and tedious.

At the commencement of the fiscal year Brevet Brigadier General James F. Rusling entered upon investigations at Chicago, Illinois, where he remained from the 5th to the 26th of July, 1865; he then came to Washington and obtained thirty days' leave of absence, and on the 8th September, 1865, was ordered to report to the President of the United States for special duty, upon which he continued until the 15th of November, 1865.

On the 18th November he was ordered by the Quartermaster General to make investigations at Chattanooga, where he arrived on the 23d November. On completion of this investigation, under orders from Brevet Major General Donaldson, chief quartermaster military division of the Tennessee, he made inspections in succession at Memphis, Vicksburg, Mobile, Savannah, and Augusta, returning to Nashville on April 14, 1866.

On the 18th April he was directed by the Quartermaster General to make inspections in South Carolina. He received the order on the 25th April, and reported from Charleston, South Carolina, on the 3d of May, 1866. He made inspections under this order at Charleston, Hilton Head, Columbia, Florence, and several minor posts in the department, reporting at Washington the 18th of June, 1866.

On the 27th June he was ordered by the Quartermaster General to make an inspection at Pittsburg, Pennsylvania, the result of which he reported on the 9th of July, 1866.

On the 10th of July he was directed by the Quartermaster General to make inspections at Forts Leavenworth, Riley, McPherson, Sedgwick, and Denver City, thence to Salt Lake City, California, &c.

His reports of inspections at these posts have been received as far as Denver City, making a total of twenty-eight (28) reports during the fiscal year and since its termination.

General Rusling has faithfully performed his arduous duties. His appointment as inspector was fitly made. In his tour to the Pacific coast he is giving a full, faithful, and valuable report of his operations, which will be of great value to the department. He has fairly earned the brevet of Brigadier General of United States volunteers, lately conferred upon him by the War Department.

Colonel J. C. Crane, assistant quartermaster United States volunteers, who was assigned as inspector of the quartermaster's department on the 30th of August, 1864, has performed no duty whatever in the department during the fiscal year. Although not available for duty, he still retains his assignment, and is carried upon the rolls as an inspector.

Colonel R. Brinkerhoff, assistant quartermaster United States volunteers, who was assigned to duty as an inspector on the 24th of June, 1865, was employed thereafter by the Secretary of War in making special investigations in connection with the War Department. He remained upon this duty until November 13, 1865, when, by Special Orders No. 599, Adjutant General's office, he was placed in charge of the depot at Cincinnati, Ohio, but not relieved of his assignment as inspector.

On the 12th of January, 1866, Brevet Brigadier General C. H. Tompkins, assistant quartermaster United States army, was appointed an inspector of the quartermaster's department, but has not yet been assigned to any duty appropriate to his appointment.



## TEMPORARY INSPECTORS.

It has become necessary during the fiscal year, as before, to assign officers on duty in the department temporarily as inspectors to aid in the work of reduction.

The following list indicates the number of reports of inspection and investigation rendered by each of the officers thus detailed, during and subsequent to the fiscal year ending June 30, 1866:

Brevet Major General R. Ingalls, quartermaster United States army.....	1
Major R. W. Kirkham, quartermaster United States army.....	1
Brevet Brigadier General A. J. Perry, chief second division.....	2
Brevet Lieutenant Colonel J. G. C. Lee, assistant quartermaster United States army.....	1
Brevet Brigadier General George S. Dodge, inspector quartermaster's department.....	40
Colonel R. C. Rutherford, assistant quartermaster United States volunteers.	3
Colonel A. Edwards, assistant quartermaster United States volunteers.....	2
Brevet Colonel C. H. Irvin, assistant quartermaster United States volunteers.	8
Lieutenant Colonel G. A. Shallenberger, assistant quartermaster volunteers.	1
Brevet Major H. A. Royce, assistant quartermaster United States volunteers.	15
Brevet Major John V. Furey, assistant quartermaster United States volunteers.....	2
Brevet Major T. B. Hunt, assistant quartermaster United States volunteers.	1
Captain J. P. Rutherford, assistant quartermaster United States volunteers.	1
Captain E. B. Grimes, assistant quartermaster United States army.....	1
Captain J. S. Trumbull, assistant quartermaster volunteers.....	2
Captain A. S. Kimball, assistant quartermaster volunteers.....	1
Captain George P. Webster, assistant quartermaster volunteers.....	1
Captain C. W. Nash, assistant quartermaster volunteers.....	1
Captain George P. Ladd, assistant quartermaster volunteers.....	1
	<hr/>
	85
	<hr/>

In addition to the above, seventeen (17) special reports of inspections have been received during the fiscal year from chief quartermasters of divisions, departments, &c., on which action has been taken by this division; also, twenty-nine (29) reports of investigations made by officers at their stations, at the instance of this division, during the fiscal year.

From July 1, 1866, to October 1, 1866, the following reports of inspection and investigation have been received, made by officers specially assigned to the duty:

Brevet Brigadier General A. J. Perry, chief second division.....	1
Brevet Colonel George P. Webster, assistant quartermaster volunteers.....	1
Captain E. B. W. Restieaux, assistant quartermaster volunteers.....	1
Captain George T. Browning, assistant quartermaster volunteers.....	2
	<hr/>
	5
	<hr/>

In addition to which are two (2) special reports of inspections by chief quartermasters, and two (2) reports of special investigations made by officers at their stations.

RECAPITULATION.

Number of reports of inspections and investigations received by the eighth division, Quartermaster General's office, during the fiscal year ending June 30, 1866 :

Brevet Brigadier General George V. Rutherford, chief inspection division..	43
Brevet Brigadier General J. D. Bingham, inspector quartermaster's department.....	23
Colonel J. D. Cruttenden, inspector quartermaster's department.....	13
Brevet Brigadier General James F. Rusling, inspector quartermaster's department .....	26
Officers specially assigned to inspection duty .....	85
Inspection reports of chief quartermasters .....	17
Reports of investigations made by officers at their stations.....	29

NUMBER RECEIVED SINCE JULY 1, 1866.

Brevet Brigadier General George V. Rutherford, chief inspection division.	11
Brevet Brigadier General J. D. Bingham, inspector quartermaster's department.....	3
Colonel J. D. Cruttenden, inspector quartermaster's department..	3
Brevet Brigadier General J. F. Rusling, inspector quartermaster's department.....	9
Reports of inspection and investigation from various sources....	9
	<hr/>
	273
	<hr/>

In addition to the preceding, action has been taken by this division upon thirty-five (35) extracts from inspection reports furnished by the Inspector General United States army, for the information and action of the Quartermaster General.

USEFULNESS OF INSPECTORS.

The actual reductions in the expenses of the quartermaster's department, resulting from inspections made by officers of this department, cannot be closely estimated.

Brevet Brigadier General James F. Rueling has embodied in his annual report a tabular statement showing that, at the depots and posts inspected by him from about June 30, 1865, to July 31, 1866, the current expenses prior to inspection aggregated \$1,508,160 42 per month—the number of employes being 21,563; that he made recommendations involving a reduction of the expenditures to \$512,806, and of the employes to 9,009; that these reductions were, for most part, carried out, involving a saving to the department of nearly one million dollars per month.

My reports of duty outside of my division show orders for reduction by discharge of employes alone, aggregating during the fiscal year the sum of \$216,891.

The reports of Brevet Brigadier General J. D. Bingham pertain more to investigations of alleged irregularities and inspection of public property, the latter resulting indirectly in heavy reductions; but no data are on file to show the approximate money value of the saving made in accordance with his recommendations.

BOARD OF EXAMINERS OF OFFICERS OF THE QUARTERMASTER'S DEPARTMENT.

At the commencement of the fiscal year, the examining board for the departments of the east and Washington was alone convened. Three other boards

constituted by previous orders, and concerning which details were given in the last report, were incomplete and had suspended their labors.

The board for the departments of the east and Washington continued in their examinations with the following results :

Number of officers examined since July 1, 1865.....	31
Reported qualified.....	19
Reported disqualified.....	12
	— 31
	==

By Special Orders No. 440, Adjutant General's Office, August 15, 1865, Lieutenant Colonel Alexander Bliss, president of the board, was relieved from his assignment as lieutenant colonel, and as the board then consisted of two regular officers and one volunteer officer, further proceedings became illegal unless by proper orders it was newly organized.

This was not considered expedient by the Honorable Secretary of War, and no further examinations have been made.

There still remain to be examined as follows :

Regular officers.....	49
Volunteer officers.....	44

#### STATUS OF OFFICERS OF THE QUARTERMASTER'S DEPARTMENT AT THE COMMENCEMENT OF THE FISCAL YEAR, AND SUBSEQUENT CHANGES TO SEPTEMBER 30, 1866, INCLUSIVE.

On the 1st of July, 1865, the quartermaster's department of the regular army comprised seventy-nine (79) bonded officers, with lineal rank as follows :

Brigadier general.....	1
Colonels.....	3
Lieutenant colonels.....	4
Majors.....	11
Captains.....	49
Military storekeepers.....	11
	—
	79
	==

By virtue of brevet appointment, by assignment under the acts of July 17, 1862, and July 4, 1864, or by commission in the volunteer service, the following were serving with increased rank :

One brigadier general as brevet major general.

Of the colonels there were—

Brevet brigadier generals.....	2
--------------------------------	---

Of the lieutenant colonels there were—

Colonels and aides-de-camp ..	1
Colonel under act of July 4, 1864.....	1

Of the majors there were—

Brevet major generals, volunteers, not on duty in the quartermaster's department.....	1
Brigadier generals, volunteers.....	3
Colonels under act of July 4, 1864.....	3
Lieutenant colonels and aides-de-camp.....	1

Of the captains there were—

Brigadier generals, volunteers, not on duty in the quartermaster's department.....	3
Brevet brigadier general United States volunteers.....	2
Colonels under act of July 4, 1864.....	3
Colonels and aides-de-camp.....	2
Lieutenant colonels under act 17th July, 1862.....	5

Of these there were two majors and five captains not assigned to duty in department, reducing the effective force of the regular corps to seventy-two.

[NOTE.—The number of captains and assistant quartermasters of the regular service at the commencement of the fiscal year was stated in the last report to be forty-eight, but by appointment of the honorable Secretary of War another officer was added to the corps during the year, making forty-nine.

This office was not notified of that fact, however, until the annual report of the Quartermaster General had been forwarded to the War Department.]

On the 1st of July, 1865, the number of captains and assistant quartermasters of volunteers was 553.

Of these there were serving with increased rank—

Brigadier general still holding commission as assistant quartermaster.....	1
Brevet brigadier general.....	1
Colonel and aide-de-camp.....	1
Colonels under act of July 4, 1864.....	25
Brevet colonels.....	5
Lieutenant colonels under act of July 17, 1862.....	13
Brevet lieutenant colonel.....	1
Majors under act of July 4, 1864.....	26
Major and aide-de-camp.....	1
Brevet majors.....	3

Two volunteer officers were assigned to duty in other staff departments at the time, reducing the effective force to 551.

[NOTE.—In explanation of the discrepancy existing between the number of volunteer quartermasters stated in the last report to be in service at the end of the fiscal year and the number now returned, I would remark that I have caused the records to be thoroughly examined as far back as 1860, and with the information derived from the Adjutant General's office have found differences, arising principally from the non-cancelment of appointments after the usual time of acceptance of commission had expired.]

During the fiscal year ending June 30, 1866, officers went out of the military service as follows :

	Regulars. Capt. and A. Q. M.	M. S. K.	Volunteers. Capt. & A. Q. M.
Resigned.....	8	1	7
Mustered out.....	..	..	402
Appointments cancelled.....	..	..	23
Appointments vacated.....	..	..	1
Dropped, being additional aides-de-camp.....	..	..	2
Dismissed.....	..	..	1
Transferred to United States army.....	..	..	3
Died.....	..	..	4
Total.....	8	1	442
	=	=	=

During the fiscal year there were appointed as follows :

Captains and assistant quartermasters United States army.....	6
Military storekeepers United States army.....	2
Captain and assistant quartermaster United States volunteers.....	0

And at the close of the fiscal year ending June 30, 1866, the regular corps of the quartermaster's department were as follows:

Brigadier general .....	1
Colonels .....	3
Lieutenant colonels .....	4
Majors .....	11
Captains .....	47
Military storekeepers .....	12
	—
Total .....	78
	==

There were serving under increased rank as:

Brevet major generals .....	7
Brevet brigadier generals .....	21
Brevet colonels .....	9
Brevet lieutenant colonels .....	12
Brevet majors .....	3

Of the brevet major generals there were one brigadier general, one colonel, four majors, and one captain.

Of the brevet brigadier generals there were two colonels, two lieutenant colonels, five majors, and twelve captains.

Of the brevet colonels there were one lieutenant colonel and one major.

Of the brevet lieutenant colonels there were twelve captains.

Of the brevet majors there were three captains.

There were on duty by assignment, under the act of July 4, 1864, with the rank of colonel—

Lieutenant colonels {	Brevet brigadier general .....	1
	Brevet colonel .....	1
Majors {	Brevet major general .....	1
	Brevet brigadier general .....	1
Captains {	Brevet brigadier generals .....	6
	Brevet colonels .....	2
	Captain .....	1
		—
		13
		==

Of the colonels there were in charge of divisions of the Quartermaster

General's office .....	5
In charge of military departments .....	5
Inspectors .....	2
In charge of principal depots .....	1
	—

Total .....

13  
==

There was assigned under the act of July 4, 1864, with rank of major, captain .....

1

There were at the end of the fiscal year, not under orders of the Quartermaster General, captains .....

3

Under sentence of general court-martial, captain .....

1

Total .....

4

Which reduced the effective force at this time to 74.

At the end of the fiscal year the volunteer corps of the quartermaster's department comprised the following officers:

Captains and assistant quartermasters .....

111

Of these there were serving with increased rank as—

Brevet brigadier generals . . . . .	10
Brevet colonels . . . . .	13
Brevet lieutenant colonels . . . . .	11
Brevet majors . . . . .	42

Of these there were assigned, under the act of July 4, 1864, with the rank of colonel, 18.

Of the colonels there were in charge of divisions of the Quartermaster General's office . . . . .	3
In charge of military departments . . . . .	7
Inspectors . . . . .	3
In charge of principal depots . . . . .	3
Not on duty, settling accounts . . . . .	2
	<hr/>
	18

There were awaiting trial by court-martial, 5 captains; which latter reduced the effective force of the volunteer corps of the quartermaster's department on the 30th of June, 1866, to 106.

Recapitulation of effective force of the regular and volunteer corps, quartermaster's department, at close of fiscal year ending June 30, 1866 :

Regular corps . . . . .	74
Volunteer corps . . . . .	106
	<hr/>
Total . . . . .	180
	<hr/>

From July 1, 1866, to October 1, 1866, officers of the quartermaster's department vacated their commissions as follows :

	Assistant quartermasters.	
	Regulars.	Volunteers.
Transferred to the United States army . . . . .	..	1
Mustered out . . . . .	..	30
Dismissed . . . . .	..	1
	<hr/>	<hr/>
Total . . . . .	..	32
		<hr/>

During the same period there was added to the regular corps of the quartermaster's department, by appointment of the honorable Secretary of War, one captain and assistant quartermaster.

There were promoted during the same period, under the act of July 28, 1866, majors to the rank of colonel and assistant quartermaster general	3
Major to the rank of lieutenant colonel and deputy quartermaster general	1
	<hr/>
Total . . . . .	4
	<hr/>

Consequently, on the 1st of October, 1866, there were seventy-nine officers of the regular corps, as follows :

Brigadier general . . . . .	1
Colonels . . . . .	6
Lieutenant colonels . . . . .	5
Majors . . . . .	7
Captains and assistant quartermasters . . . . .	48
Captains and military storekeepers . . . . .	12
	<hr/>
Total . . . . .	79
	<hr/>



Of these there were serving under increased rank—

Brevet major generals.....	7
Brevet brigadier generals.....	21
Brevet colonels.....	9
Brevet lieutenant colonels.....	12
Brevet majors.....	3

Of the brevet major generals there were—

Brigadier general.....	1
Colonels.....	4
Lieutenant colonel.....	1
Captain.....	1

Of the brevet brigadier generals there were—

Colonels.....	2
Lieutenant colonels.....	2
Majors.....	5
Captains.....	12

Of the brevet colonels there were—

Lieutenant colonel.....	1
Majors.....	1
Captains.....	7

Of the brevet lieutenant colonels there were—

Captains.....	12
---------------	----

Of the brevet majors there were—

Captains.....	3
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There were on duty by assignment, under the act of July 4, 1864, with rank of colonel—

Lieutenant colonels {	Brevet brigadier general.....	1
	Brevet colonel.....	1
Major.	Brevet brigadier general.....	1
Captains {	Brevet brigadier generals.....	6
	Brevet colonels.....	2
	Captain.....	1

Total..... 12

Of the above colonels there were in charge of divisions, Quartermaster General's office.....

In charge of military departments.....	3
In charge of principal depots.....	1
Inspectors.....	2
Not on duty under assignment.....	1

Total..... 12

There was assigned under act of July 4, 1864, with rank of major, quartermaster's department—

Captains.....	1
---------------	---

There were on the 1st of October, 1866, not under orders of Quartermaster General—

Captains.....	3
---------------	---

Thus showing the effective force on the 1st of October, 1866, of the regular corps to be..... 76

The number of officers of the volunteer force on the 1st of October, 1866. was as follows :

Captains and assistant quartermasters . . . . .	79
Of these there were—	
Brevet brigadier generals . . . . .	9
Brevet colonels . . . . .	9
Brevet lieutenant colonels . . . . .	6
Brevet majors . . . . .	32
There were assigned under act of July 4, 1864, with the rank of colonel.	15
Of these colonels there were—	
In charge of divisions Quartermaster General's office . . . . .	3
In charge of military departments . . . . .	3
In charge of principal depots . . . . .	2
Inspectors . . . . .	3
Not on duty, (settling accounts,) . . . . .	4
Total . . . . .	15

There were on the 1st of October, 1866, awaiting trial by court-martial—	
Captains . . . . .	4
Which reduced the effective force of the volunteer corps, at that date, to . . .	75
Recapitulation of the effective force of the regular and volunteer corps of the quartermaster's department on the 1st of October, 1866 :	
Regular corps . . . . .	76
Volunteer corps . . . . .	75
Total . . . . .	151

REORGANIZATION OF THE QUARTERMASTER'S DEPARTMENT UNITED STATES ARMY.

Under the act of Congress approved July 28, 1866, the organization of the quartermaster's department was established as follows :

Brigadier general, Quartermaster General . . . . .	1
Colonels and assistant quartermaster generals . . . . .	6
Lieutenant colonels and deputy quartermaster generals . . . . .	10
Majors and quartermasters . . . . .	15
Captains and assistant quartermasters . . . . .	44
Captains and military storekeepers . . . . .	16
Up to date of this report the appointments of but four (4) officers to fill vacancies created by this act have been received from the War Department, to wit:	
Colonels and assistant quartermaster generals . . . . .	3
Lieutenant colonel and deputy quartermaster general . . . . .	1
Total . . . . .	4

OFFICIAL RECORDS.

The records of the division during the fiscal year have been thoroughly systematized, with the endeavor to take proper notice of each paper submitted to the division for action, and to retain the fullest information concerning it.

Separate entry books have been kept for the reports and papers relating to investigations and special inspections, of inventory and inspection reports, and boards of survey, of miscellaneous letters received, and of personal reports, annual reports, &c.

These papers have been not only entered under their principal headings, but various cross-entries have been made, by which the name of every party referred to in the various communications is placed upon the records for future use.

These entries are carefully indexed, and in such a manner as to enable any information on the files of the division relative to any person, post, or depot noted, to be at once reached and made use of if needed.

The number of letters, reports, &c., received and entered in the division are as follows :

During the fiscal year ending June 30, 1866 :

Principal entries .....	6, 656
Cross-entries .....	8, 878
Total.....	<u>15, 534</u>

From July 1, 1866, to October 1, 1866 :

Principal entries .....	1, 062
Cross-entries .....	988
Total.....	<u>2, 050</u>

Total principal entries .....	7, 718
Total cross-entries .....	9, 866
Total.....	<u>17, 584</u>

In addition to which have been received, entered, and noted large numbers of personal monthly reports, receipts of orders, &c.

#### INVENTORY AND INSPECTION REPORTS.

The number of inventory and inspection reports rendered by officers in compliance with paragraph 1023 Revised Regulations, received and entered from July 1, 1865, to June 30, 1866, is ..... 11, 049

All of which have been acted upon.

Received, entered, and acted upon from June 30, 1866, to September 30, 1866.....	639
	<u>11, 688</u>

#### BOARDS OF SURVEY.

The number of reports of boards of survey received, entered, and acted upon from July 1, 1865, to July 1, 1866, is ..... 704

Received, entered, and acted upon from June 30, 1866, to September 30, 1866.....	54
Total.....	<u>758</u>

#### COMMUNICATIONS SENT.

The number of communications (exclusive of correspondence in reference to annual and personal reports, the transmission of printed orders and printed cir-

cular letters) forwarded from this division from June 30, 1865, to July 1, 1866, is as follows :

To the Secretary of War.....	199
To the Adjutant General.....	1, 169
Miscellaneous .....	2, 036
	<u>3, 404</u>

And from July 1, 1866, to September 30, 1866, inclusive—

To the Secretary of War .....	35
To the Adjutant General.....	213
Miscellaneous .....	340
	<u>588</u>

Total from June 30, 1865, to September 30, 1866, as follows :

To the Secretary of War .....	234
To the Adjutant General!.....	1, 382
Miscellaneous .....	2, 376
	<u>3, 992</u>
Total.....	<u>3, 992</u>

#### DISTRIBUTION OF GENERAL AND SPECIAL ORDERS.

The various orders received or promulgated by the Quartermaster General for distribution have been promptly transmitted to the chief quartermasters of the various departments, in numbers corresponding to the lists of officers which they have reported as on duty under their direction.

Numerous reports have been received, however, to the effect that these orders have been irregularly received by these officers, and frequent instances occur of violation of duty and instructions on that account.

While the mail may have been irregular, the probability is that insufficient care has been taken by the officers in charge of departments to see that their subordinates have been regularly provided with the various orders issued.

The following lists show the number of general and special orders on hand at the commencement of the fiscal year and since received and distributed.

Estimated number of general and special orders Adjutant General's office, on hand July 1, 1865, and received and distributed during the fiscal year, have been as follows :

	Special Orders.	General Orders.
On hand July 1, 1865 .....	3, 250	22, 502
Received to June 30, 1866.....	2, 819	72, 400
	<u>6, 069</u>	<u>94, 902</u>
Total.....	6, 069	94, 902
Issued during fiscal year.....	1, 260	54, 272
	<u>4, 809</u>	<u>40, 630</u>
Remaining on hand June 30, 1866.....	4, 809	40, 630

Received and issued from July 1, 1866, to September 30, 1866 :

	Special Orders	General Orders.
Received .....	279	18, 000
Distributed .....	115	12, 950
On hand October 1, 1866.....	4, 973	45, 680
	<u>5, 367</u>	<u>76, 630</u>

Total issued from July 1, 1865, to September 30, 1866 :

General Orders.....	67, 222
Special Orders .....	1, 375
	<u>68, 597</u>
Total .....	<u>68, 597</u>

The number of copies of general orders promulgated by the Quartermaster General's office, on hand June 30, 1865, received and distributed during the fiscal year, are as follows :

On hand July 1, 1865.....	21, 879
Received to June 30, 1866 .....	182, 900
	<hr/>
	204, 779
Issued .....	53, 670
	<hr/>
On hand June 30, 1866.....	151, 109
	<hr/> <hr/>

Received and issued from July 1, 1866, to October 1, 1866 :

Received .....	21, 500
Issued .....	12, 200
On hand September 30, 1866 .....	160, 409
Total issued from July 1, 1865, to September 30, 1866, is.....	65, 870

There are included in the above Quartermaster General's orders 6,000 copies of the Roll of Honor, published under the form of orders, but not intended for general distribution.

A portion of these have been distributed to senators, members of Congress, public libraries, and prominent newspapers throughout the country.

In addition, there have also been received and distributed during the fiscal year the following official documents:

Army Registers received.....	1, 000
Army Registers issued.....	701
Army Registers on hand.....	299
Digests Second Comptroller, received.....	100
Digests Second Comptroller, issued.....	92
Digests Second Comptroller, on hand.....	8
Quartermaster General's annual reports for 1865, received.....	1, 000
Quartermaster General's annual reports for 1865, issued.....	688
Quartermaster General's annual reports for 1865, on hand.....	312

None of the above documents have been issued since the close of the fiscal year.

#### ASSIGNMENTS.

During the fiscal year there were one hundred and seventy-five assignments of officers of the quartermaster's department to duty by orders of the War Department, of which we have record, and from July 1, 1866, to October 1, 1866, there were twenty-three such assignments, in all one hundred and ninety-eight, including changes of station.

#### ANNUAL REPORTS.

The number of annual reports of officers received, as follows:

During the fiscal year ending June 30, 1866.....	543
From July, 1866, to September 30, 1866.....	209
	<hr/>
Total.....	752
	<hr/> <hr/>

These reports have been analyzed, and the results submitted in tabular form for your information..

In accordance with your instructions, the annual reports of officers for previous years are being copied upon paper of uniform size for the purpose of binding.

The reports of the fiscal year of 1863 will be ready for binding by the 1st of January, 1867.

## RECORDS OF OFFICERS OF THE QUARTERMASTER'S DEPARTMENT.

The officers' record mentioned in the annual report for 1865 has been, during the past year, much extended and amplified.

The addresses of nearly all officers of the volunteer service who have been mustered out during the fiscal year have been obtained and recorded. Recommendations relative to their qualifications, usefulness, and faithfulness have been noted, and the record of their entire military service has been compiled as completely as obtainable data would permit.

A similar record is now being compiled of lieutenants and acting assistant quartermasters, who have been assigned to duty during the war in the field or at various posts, and also of those now on duty in the department.

So far as the materials can be obtained from various sources, it is designed that these books shall embody a complete record of every officer of the quartermaster's department who has been or is now in its service.

## NEWSPAPERS.

Under recent orders from the Quartermaster General, officers of the quartermaster's department stationed at various posts throughout the country have subscribed to and forwarded to this division newspapers published, either at their stations or in the immediate vicinity, showing the current rate of prices of produce and merchandise, and giving general information as to events transpiring in those localities.

These papers are carefully and systematically arranged, and it is proposed that their contents shall be so indexed that any information relative to the affairs of the quartermaster's department, or to the general interests of the country, can at once be reached and made used of in connection with the administration of the quartermaster's department.

Each paper, upon reaching the office, is so scrutinized that any matter pertaining to the quartermaster's department can be at once noted, and, if necessary, acted upon.

The benefit of this collection will undoubtedly be great, and the fund of information thus obtained will be invaluable.

## OFFICERS ON DUTY IN THE DIVISION.

Brevet Major John V. Furey has been on duty during the fiscal year in the inspection division. His duties have been more distinct and separate from mine than those of Major Royce, but of his integrity, faithfulness, and usefulness in the position he has occupied there is no question. He is temperate, moral, of robust health, and in my opinion well fitted by his experience for a very useful officer in the regular corps. I hope he may be transferred.

As above stated, during my absence from the office, on duty or otherwise, Brevet Major H. A. Royce was temporarily in charge, and conducted, without reference, the current business of the division, but on my return each time I made myself familiar with what had been done during his management.

To say that I was simply satisfied with the manner in which he had discharged his duties would inadequately express my appreciation of his efficiency and usefulness to the division and to the Quartermaster General's office. That he ably performed the functions and fully sustained the credit of the division is saying no more than what I believe to be strictly true and just. I therefore feel fully warranted in recommending Major Royce to the favorable consideration of the Quartermaster General for continuance in the government service as an able and worthy officer.

In conclusion, may I not here properly express my profound feelings of gratitude and of high consideration of respect and regard for yourself, sir, for your



uniform courtesy and kindness towards myself, not overlooking your generous indulgence and forbearance with my inexperience and probable inability to discharge without error the exceedingly multiplex, varied, and important duties intrusted to me during my connection with your office—errors more likely to occur and be made conspicuous in one suddenly transferred from a citizen to a soldier, and removed from civil to military or official duties.

\* \* \* \* \*

I wish also to add that in my official relations with officers of your department, both regular and volunteer, with whom I have been brought in contact by inspection and other duty, I have generally been treated with courtesy and respect. My intercourse with them has been pleasant and agreeable, and in sundering my official associations with them I carry with me for them only the kindest sentiments of esteem and grateful recollections.

#### CLERKS OF THE DIVISION.

The clerks on duty in the division, by their decorum, gentlemanly demeanor, and constant application to duty, have continued to sustain the high order of merit to which I alluded in my last report. Their duties are difficult and arduous, but have been performed with fidelity and faithfulness.

I respectfully submit with my report the following papers :

Annual report of officers for the fiscal year ending June 30, 1866, and report of officers having left the service from July 1, 1866, to October 1, 1866.

List of officers serving at depots other than principal depots during the fiscal year.

List of principal depots, with the names of officers in charge, during the fiscal year.

List of inspectors, quartermaster's department, during the fiscal year.

List of officers who have served as chief quartermasters of armies during the fiscal year.

List of officers in charge of divisions, Quartermaster General's office, during the fiscal year.

List of officers who have served as senior and supervising and chief quartermasters of departments during the fiscal year.

List of officers who have served as chief quartermasters of corps during the fiscal year.

List of officers who have served as chief quartermasters of divisions of the army during the fiscal year.

List of officers of the quartermaster's department who have been promoted by brevet for faithful and meritorious services during the war.

Very respectfully, your obedient servant,

GEO. V. RUTHERFORD,

*Col. and Chief Inspection Division, Brevet Brig. Gen.*

Brevet Major General M. C. MEIGS,

*Quartermaster General U. S. A., Washington, D. C.*

*Annual report of officers of the Quartermaster's Department (regulars and volunteers) for the fiscal year ending June 30, 1866.*

#### REGULARS.

Names.	Rank, &c.
1. M. C. Meigs.....	Brig. gen. and bvt. maj. gen.
2. Charles Thomas.....	Col. and bvt. maj. gen.
3. Thomas Swords.....	Col. and bvt. brig. gen.
4. George H. Crosman....	Col. and bvt. brig. gen.
5. David H. Vinton .....	Lt. col. and bvt. brig. gen.

Names.	Rank, &c.
6. Edwin B. Babbitt.....	Lt. col. and bvt. col.
7. Osborne Cross.....	Lt. col.
8. Robert E. Clary.....	Lt. col. and bvt. brig. gen.
9. Morris S. Miller.....	Maj. and bvt. brig. gen.
10. Alexander Montgomery.....	Major.
11. Robert Allen.....	Maj. and bvt. maj. gen.
12. James L. Donaldson....	Maj. and bvt. maj. gen.
13. Langdon C. Easton....	Maj. and bvt. brig. gen.
14. Stewart Van Vliet.....	Maj. and bvt. brig. gen.; brig. gen. and bvt. maj. gen. of vols.
15. Daniel H. Rucker.....	Maj. and bvt. maj. gen.
16. Rufus Ingalls.....	Maj. and bvt. maj. gen.
17. Ralph W. Kirkham....	Maj. and bvt. col.
18. John C. McFerran.....	Maj. and bvt. brig. gen.
19. Frederick Myers.....	Maj. and bvt. brig. gen.
20. Tredwell Moore.....	Capt. and bvt. lt. col.
21. Hyatt C. Ransom.....	Capt. and bvt. lt. col.
22. Asher R. Eddy.....	Capt. and bvt. col.
23. Rufus Saxton.....	Capt. and bvt. brig. gen.
24. Samuel B. Holabird....	Capt. and bvt. brig. gen.
25. Judson D. Bingham....	Capt. and bvt. brig. gen.
26. Alexander J. Perry.....	Capt. and bvt. brig. gen.
27. John G. Chandler.....	Capt. and bvt. col.
28. Robert O. Tyler.....	Capt. and bvt. maj. gen.
29. William Myers.....	Capt. and bvt. brig. gen.
30. Charles G. Sawtelle....	Capt. and bvt. col.
31. Charles W. Thomas....	Capt. and bvt. lt. col.
32. Alvan C. Gillem.....	Capt. and bvt. brig. gen.; maj. gen. of vols.
33. Walworth Jenkins.....	Capt.; resignation accepted S. O. 535, A. G. O., Oct. 10, 1865.
34. Henry C. Hodges.....	Capt. and bvt. lt. col.
35. James J. Dana.....	Capt. and bvt. brig. gen.
36. Warren L. Lothrop....	Capt. and bvt. lt. col.
37. Herman Biggs.....	Capt. and bvt. col.; resignation accepted S. O. 537 A. G. O., Oct. 9, 1865.
38. Herbert M. Enos.....	Capt. and bvt. col.
39. Elisha E. Camp.....	Capt. and bvt. lt. col.
40. Benjamin C. Card.....	Capt. and bvt. brig. gen.
41. Joseph A. Potter.....	Capt. and bvt. brig. gen.
42. Charles H. Tompkins....	Capt. and bvt. brig. gen.
43. Charles A. Reynolds....	Capt. and bvt. lt. col.
44. Alexander N. Shipley..	Capt.; resignation accepted S. O. 360, A. G. O., July 6, 1865.
45. George B. Dandy.....	Capt. and bvt. brig. gen.
46. George H. Weeks.....	Captain.
47. Elias B. Carling.....	Capt. and bvt. lt. col.
48. Francis J. Crilly.....	Capt. and bvt. lt. col.
49. William B. Hughes....	Captain.
50. Augustus G. Robinson..	Capt. and bvt. major.
51. Edward D. Baker.....	Captain.
52. Charles W. Moulton....	Captain; resignation accepted, S. O. 526, A. G. O., Oct. 6, '65.
53. James A. Ekin.....	Captain and bvt. brig. gen.
54. Alexander Bliss.....	Captain and bvt. col.
55. Austin C. Woolfolk,....	Captain and bvt. maj.; resignation accepted, S. O. 220, A. G. O., May 11, 1866.
56. Henry W. Janes.....	Captain and bvt. maj.
57. Henry Inman.....	Captain.
58. Luther H. Peirce.....	Captain and bvt. lieut. col.
59. William W. McKim....	Captain; resignation accepted, S. O. 108, A. G. O., Mar. 10, '66.
60. Gardner S. Blodgett....	Captain; resignation accepted, S. O. 554, A. G. O., Oct. 13, '65.
61. James G. C. Lee.....	Captain and bvt. lieut. col.
62. James M. Moore.....	Captain and bvt. lieut. col.
63. James Gillis.....	Captain.
64. Richard N. Batchelder..	Captain and bvt. col.
65. Edward B. Grimes.....	Captain and bvt. maj.
66. Andrew J. McGonnigle..	Captain.
67. Parmenas T. Turnley....	Captain; resignation accepted, S. O. 609, A. G. O., Nov. 21, '65.
68. *Theodore J. Eckerson..	Captain; appointed March 21, 1865.
69. J. W. Scully.....	Captain; appointed September 27, 1865.
70. William T. Howell.....	Captain; appointed October 26, 1865.

\* Erroneously carried on annual report of officers for the last fiscal year as assistant quartermaster of volunteers.

Names.	Rank, &c.
71. George W. Bradley.....	Captain; appointed November 4, 1865.
72. Charles W. Foster.....	Captain and bvt. col.; appointed November 4, 1865.
73. George E. Alden .....	Captain; appointed November 27, 1865.
74. Simon F. Barstow.....	Captain; appointed May 11, 1865.

MILITARY STOREKEEPERS.

1. Reuben M. Potter . ....	Captain.
2. William H. Gill.....	Captain.
3. Daniel G. Thomas.....	Captain.
4. Charles A. Alligood ....	Captain.
5. John F. Rodgers.....	Captain.
6. Gustavus A. Hull .....	Captain.
7. George H. A. Dimpfel ..	Captain.
8. Michael E. Lucas.....	Captain.
9. William G. Hodges.....	Captain.
10. Augustus G. Norcross...	Captain; resignation accepted, S. O. 514, A. G. O., Sept. 26, '65.
11. John Craig.....	Captain.
12. N. D. A. Sawyer.....	Captain; appointed September 28, 1865.
13. John Livers .....	Captain; appointed November 27, 1865.

RECAPITULATION.

	Brigadier generals.	Colonels.	Lieutenant colonels.	Majors.	Captains.	Military storekeepers.
In service July 1, 1865.....	1	3	4	11	49	11
Resigned during the fiscal year.....					8	1
Appointed during the fiscal year.....					6	2
In service July 1, 1866.....	1	3	4	11	47	12

Respectfully submitted :

JOHN V. FUREY,  
*Brevet Major, Assistant Quartermaster.*

VOLUNTEERS.

Names.	Rank, &c.
1. Allen, J. F.....	Captain; mustered out, S. O. 381. A. G. O., July 19, 1865.
2. Allen, E. S.....	Captain and brevet lieutenant colonel.
3. Armstrong, W. B.....	Captain.
4. Armstrong, G. A.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
5. Anderson, G. W.....	Captain; mustered out, S. O. 576, A. G. O., October 31, 1865.
6. Ashmead, A. S.....	Captain; mustered out, S. O. 597, A. G. O., November 11, 1865
7. Alden, George E.....	Captain; appointed A. Q. M. U. S. A. November 27, 1865.
8. Abbott, J. C.....	Captain; mustered out, S. O. 431, A. G. O., August 10, 1865.
9. Amee, J. L. C.....	Captain; mustered out, S. O. 144, A. G. O., March 30, 1866.
10. Avis, Samuel.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
11. Artsman, Gustavus....	Captain.
12. Alberger, Morris H....	Captain and brevet major; mustered out, S. O. 252, A. G. O., May 31, 1866.
13. Atwood, George E....	Captain; mustered out, S. O. 36, A. G. O., January 27, 1866.
14. Brown, S. L.....	Captain and brevet brigadier general.
15. Burr, Raymond.....	Captain and brevet colonel.
16. Boyd, J. F.....	Captain and brevet brigadier general; mustered out, S. O. 112, A. G. O., March 13, 1866.
17. Bradley, G. W.....	Captain and brevet colonel; appointed A. Q. M. U. S. A. No- vember 4, 1865.
18. Barker, Nathan.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
19. Brown, S. B.....	Captain and brevet major; mustered out, S. O. 125, A. G. O., March 20, 1866.
20. Brown, Jos. M.....	Captain and brevet major.
21. Brown, John H.....	Captain; mustered out, S. O. 36, A. G. O., January 27, 1866.

Names.	Rank, &c.
22. Brown, W. H.....	Captain; mustered out, S. O. 458, A. G. O., August 25, 1865.
23. Brownson, Harry.....	Captain and brevet major; mustered out, S. O. 574, A. G. O., October 30, 1865.
24. Brinkerhoff, R.....	Captain and brevet colonel.
25. Brooks, James.....	Captain; mustered out, S. O. 125, A. G. O., March 20, 1866.
26. Brown, Henry L.....	Captain; appointment cancelled, S. O. 365, A. G. O., July 12, 1865.
27. Blood, H. B.....	Captain and brevet lieutenant colonel; mustered out, S. O. 593, A. G. O., November 9, 1865.
28. Becker, E. C.....	Captain; mustered out, S. O. 619, A. G. O., November 27, 1865.
29. Botts, Randolph.....	Captain; mustered out, S. O. 610, A. G. O., November 22, 1865.
30. Bowles, T. C.....	Captain and brevet major; mustered out, S. O. 120, A. G. O., March 28, 1866.
31. Bagg, Sylvester.....	Captain and brevet major; mustered out, S. O. 610, A. G. O., November 22, 1865.
32. Bean, Eli B.....	Captain and brevet major; mustered out, S. O. 574, A. G. O., October 30, 1865.
33. Bradshaw, A. M.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
34. Bonsall, S. N.....	Captain; died July 19, 1865.
35. Barrett, C. S.....	Captain.
36. Burr, A. G.....	Captain; mustered out, S. O. 576, A. G. O., October 31, 1865.
37. Burton, Benjamin.....	Captain and brevet major; mustered out, S. O. 143, A. G. O., March 31, 1866.
38. Bowman, Henry.....	Captain and brevet major.
39. Blunt, A. P.....	Captain and brevet brigadier general.
40. Buck, Isaac N.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
41. Blanchard, Ozias.....	Captain; mustered out, S. O. 431, A. G. O., August 10, 1865.
42. Baird, Samuel.....	Captain.
43. Blackman, H. B.....	Captain.
44. Butze, Frank C.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
45. Boyle, John R.....	Captain; mustered out, S. O. 125, A. G. O., March 20, 1866.
46. Bradshaw, J. M.....	Captain; mustered out, S. O. 410, A. G. O., July 31, 1865.
47. Barnard, Charles.....	Captain.
48. Barnard, P. P.....	Captain; mustered out, S. O. 629, A. G. O., December 6, 1865.
49. Bullock, D. D.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., May 31, 1866.
50. Batty, J. H.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
51. Bliven, C. E.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., May 31, 1866.
52. Bohn, H. J.....	Captain; mustered out, S. O. 630, A. G. O., December 8, 1865.
53. Baker, Calvin.....	Captain; mustered out, S. O. 412, A. G. O., July 31, 1865.
54. Bowen, J. J.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
55. Burnham, G. S.....	Captain; mustered out, S. O. 431, A. G. O., August 10, 1865.
56. Browning, Geo. F.....	Captain.
57. Belcher, J. H.....	Captain.
58. Bean, S. B.....	Captain and brevet major; mustered out, S. O. 237, A. G. O., May 19, 1866.
59. Burchard, S. D.....	Captain and brevet major; mustered out, S. O. 542, A. G. O., October 13, 1865.
60. Barlow, W. H.....	Captain.
61. Bruner, F. F.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
62. Barnes, Stuart.....	Captain and brevet lieutenant colonel.
63. Beach, C. B.....	Captain; mustered out, S. O. 24, A. G. O., January 18, 1866.
64. Balch, Frank S.....	Captain; mustered out, S. O. 410, A. G. O., July 31, 1865.
65. Bridges, Charles.....	Captain; mustered out, S. O. 419, A. G. O., August 4, 1865.
66. Bradley, J. W.....	Captain; mustered out, S. O. 440, A. G. O., August 15, 1865.
67. Boyd, E. B.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., June 5, 1866.
68. Burrows, E. B.....	Captain; mustered out, S. O. 181, A. G. O., April 20, 1866.
69. Barnes, D. H.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
70. Conklin, J. T.....	Captain and brevet brigadier general; mustered out, S. O. 594, A. G. O., November 8, 1865.
71. Cruttenden, J. D.....	Captain and brevet colonel.
72. Crane, John C.....	Captain.
73. Carr, Byron O.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
74. Cochrane, W. H. D.....	Captain and brevet lieutenant colonel; mustered out, S. O. 252, A. G. O., June 15, 1866.
75. Carney, G. J.....	Captain; mustered out, S. O. 360, A. G. O., July 10, 1865.

Names.	Rank, &c.
76. Chapman, E. D.....	Captain and brevet major; mustered out, S. O. 144, A. G. O., March 30, 1866.
77. Campbell, R. G. ....	Captain; resignation accepted, S. O. 367, A. G. O., July 13, 1865.
78. Caslow, J. F.....	Captain; mustered out, S. O. 446, A. G. O., August 18, 1865.
79. Coryell, Ingham.....	Captain; mustered out, S. O. 440, A. G. O., August 15, 1865.
80. Clubb, H. S.....	Captain; mustered out, S. O. 158, A. G. O., April 7, 1866.
81. Clark, James T. ....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
82. Clark, George F.....	Captain and brevet major; mustered out, S. O. 56, A. G. O., February 8, 1866.
83. Cox, Thomas J. ....	Captain and brevet colonel.
84. Constable, N. S. ....	Captain; mustered out, S. O. 419, A. G. O., August 4, 1865.
85. Craig, John R.....	Captain and brevet major; mustered out, S. O. 531, A. G. O., October 7, 1865.
86. Craig, Samuel R.....	Captain; mustered out, S. O. 597, A. G. O., November 11, 1865.
87. Coffin, O. S. ....	Capt.; mustered out, G. C. M. O. 81, A. G. O., March 28, 1866.
88. Carlile, Thomas J.....	Captain and brevet major; mustered out, S. O. 237, A. G. O., May 19, 1866.
89. Clements, Jos. C.....	Captain and brevet major; mustered out, S. O. 56, A. G. O., February 8, 1866.
90. Clemens, G. H. ....	Captain; mustered out, S. O. 626, A. G. O., December 2, 1865.
91. Church, T. K.....	Captain; mustered out, S. O. 440, A. G. O., August 15, 1865.
92. Cumming, A. M.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., May 31, 1866.
93. Conn, Alexander.....	Captain and brevet major.
94. Camp, E. M.....	Captain and brevet major.
95. Campbell, James.....	Captain and brevet major.
96. Cadwallader, G. B.....	Captain and brevet colonel.
97. Cushing, George W....	Captain and brevet major.
98. Clowry, R. C.....	Captain and brevet lieutenant colonel; mustered out, S. O. 252, A. G. O., May 31, 1866.
99. Carver, Henry L.....	Captain and brevet lieutenant colonel; mustered out, S. O. 113, A. G. O., March 12, 1866.
100. Colburn, W. J.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., June 5, 1866.
101. Carner, A. Y.....	Captain; mustered out, S. O. 590, A. G. O., November 8, 1865.
102. Carter, B. C.....	Captain and brevet major; mustered out, S. O. 272, A. G. O., June 8, 1866.
103. Carter, Richard.....	Captain; mustered out, S. O. 619, A. G. O., November 27, 1865.
104. Cutter, Ammi.....	Captain; mustered out, S. O. 144, A. G. O., March 30, 1866.
105. Crowell, John H.....	Captain and brevet major; mustered out, S. O. 181, A. G. O., April 20, 1866.
106. Cilley, John K.....	Captain and brevet major; mustered out, S. O. 9, A. G. O., January 8, 1866.
107. Chamberlain, H. S. ....	Captain; mustered out, S. O. 570, A. G. O., October 26, 1865.
108. Currie, William.....	Captain; mustered out, S. O. 158, A. G. O., April 7, 1866.
109. Cutler, A. K.....	Captain; mustered out, S. O. 504, A. G. O., Sept. 20, 1865.
110. Churchill, James O ...	Captain and brevet lieutenant colonel.
111. Campbell, John B.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., June 20, 1866.
112. Case, Rufus K.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., May 31, 1866.
113. Cooke, Homer A.....	Captain; mustered out, S. O. 556, A. G. O., October 19, 1865.
114. Chittenden, C. B.....	Captain and brevet lieutenant colonel; mustered out, S. O. 220, A. G. O., May 11, 1866.
115. Comstock, A. H.....	Captain and brevet lieutenant colonel; mustered out, S. O. 252, A. G. O., May 31, 1866.
116. Crain, Frederick.....	Captain and brevet major; mustered out, S. O. 56, A. G. O., February 8, 1866.
117. Corson, R. R.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
118. Coverdale, R. T.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
119. Clarke, F. L.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
120. Cottrell, C. A.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
121. Cutting M. F.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
122. Curtis, David W.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
123. Corwin, David B.....	Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
124. Carnochan, W. H.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
125. Capron, T. H.....	Captain; mustered out, S. O. 576, A. G. O., October 31, 1865.
126. Childs, S. D.....	Captain.

Names.	Rank, &c.
127. Coonley, Benjamin.....	Captain; mustered out, S. O. 564, A. G. O., October 23, 1865.
128. Crist, LaTour M.....	Captain; mustered out, S. O. 440, A. G. O., August 15, 1865.
129. Crandon, T. F. P.....	Captain and brevet major.
130. Clark, R. W.....	Captain; mustered out, S. O. 570, A. G. O., October 26, 1865.
131. Dodge, George S.....	Captain and brevet brigadier general; mustered out, S. O. 103, A. G. O., March 7, 1866.
132. Drennan, J. P.....	Captain; mustered out, S. O. 610, A. G. O., November 22, 1865.
133. Deane, C. H.....	Captain and brevet lieutenant colonel; mustered out, S. O. 181, A. G. O., April 20, 1866.
134. Durbin, Greene.....	Captain.
135. Daniels, W. H.....	Captain and brevet major.
136. Del Vecchio, J. R.....	Captain and brevet lieutenant colonel; mustered out, S. O. 252, A. G. O., May 31, 1865.
137. Doan, George P.....	Captain; mustered out, S. O. 103, A. G. O., March 7, 1866.
138. Darrow, Charles.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., May 31, 1866.
139. Davis, John S.....	Captain; mustered out, S. O. 384, A. G. O., July 20, 1865.
140. Dunton, A. T.....	Captain and brevet lieutenant colonel; mustered out, S. O. 539, A. G. O., October 12, 1865.
141. Drew, C. K.....	Captain and brevet lieutenant colonel; mustered out, S. O. 125, A. G. O., March 20, 1866.
142. Dwight, T. T.....	Captain and brevet major; mustered out, S. O. 590, A. G. O., November 8, 1865.
143. Dodge, N. S.....	Captain; resignation accepted, S. O. 393, A. G. O., July 24, 1865.
144. DuPuy, H. A.....	Captain; mustered out, S. O. 255, A. G. O., May 7, 1866.
145. DeWolfe, D. O.....	Captain; mustered out, S. O. 419, A. G. O., August 4, 1865.
146. Dunbar, G. E.....	Captain and brevet lieutenant colonel; mustered out, S. O. 610, A. G. O., November 22, 1865.
147. Dudley, Thomas R.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
148. Dickinson, C. H.....	Captain; mustered out, S. O. 36, A. G. O., January 27, 1866.
149. Delaney, P. K.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
150. Doherty, W. H.....	Captain; mustered out, S. O. 629, A. G. O., December 6, 1865.
151. Dickey, W. B.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
152. Day, D. W. H.....	Captain and brevet lieutenant colonel; mustered out, S. O. 45, A. G. O., February 2, 1866.
153. Dobyns, George H.....	Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
154. Dexter, J. B.....	Captain; mustered out, S. O. 252, A. G. O., June 5, 1866.
155. Douglas, H. F.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
156. Dyer, D. H.....	Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
157. Davis, Charles W.....	Captain; mustered out, S. O. 501, A. G. O., September 19, 1865.
158. Davis, G. W.....	Captain and brevet major; mustered out, S. O. 158, A. G. O., April 20, 1866.
159. David, James I.....	Captain; appointment vacated, S. O. 626, A. G. O., December 2, 1865.
160. Dana, Milton.....	Captain; mustered out, S. O. 237, A. G. O., May 19, 1866.
161. Eckert, T. T.....	Captain and brevet brigadier general; dropped as major and aide-de-camp, Mem., A. G. O., May 28, 1866.
162. Elwell, J. J.....	Captain and brevet colonel; mustered out, S. O. 112, A. G. O., March 13, 1866.
163. Ernst, Franklin.....	Captain; mustered out, S. O. 381, A. G. O., July 19, 1865.
164. Ernst, jr., J. F.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
165. Edwards, Abraham.....	Captain; mustered out, S. O. 372, A. G. O., July 15, 1865.
166. Edwards, Arthur.....	Captain and brevet colonel; mustered out, S. O. 112, A. G. O., March 13, 1866.
167. Elison, John A.....	Captain; mustered out, S. O. 597, A. G. O., November 11, 1865.
168. Emery, C. F.....	Captain and brevet major; mustered out, S. O. 504, A. G. O., September 20, 1865.
169. Eaton, Alonzo.....	Captain; mustered out, S. O. 574, A. G. O., October 30, 1865.
170. Elliott, William.....	Captain; mustered out, S. O. 431, A. G. O., August 10, 1865.
171. Ellsworth, D. F.....	Captain and brevet major; mustered out, S. O. 504, A. G. O., September 20, 1865.
172. Evans, G. O.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
173. Emmett, Robert.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
174. Fort, G. L.....	Captain and brevet lieutenant colonel; mustered out, S. O. 125, A. G. O., March 20, 1866.
175. Fitch, T. D.....	Captain and brevet lieutenant colonel; mustered out, S. O. 564, A. G. O., October 23, 1865.
176. Flagg, G. A.....	Captain and brevet major; mustered out, S. O. 237, A. G. O., May 19, 1866.



## Names.

## Rank, &amp;c.

177. Flagg, Newton... Captain and brevet major; mustered out, S. O. 531, A. G. O., October 7, 1865.
178. Farnsworth, J. G... Captain and brevet colonel; mustered out, S. O. 564, A. G. O., October 23, 1865.
179. Farnsworth, H. J... Captain.
180. Forsyth, L. Cass... Captain.
181. Fisher, Adam... Captain; mustered out, S. O. 112, A. G. O., March 13, 1866.
182. Finney, C. G... Captain; mustered out, S. O. 564, A. G. O., October 23, 1865.
183. Fry, jr., T. W... Captain; mustered out, S. O. 252, A. G. O., May 31, 1866.
184. Flanigan, P... Captain and brevet major; mustered out, S. O. 252, A. G. O., June 5, 1866.
185. Fuller, W. G... Captain; mustered out, S. O. 458, A. G. O., August 25, 1865.
186. Furey, John V... Captain and brevet major.
187. Fahy, John... Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
188. Farnum, E. J... Captain and brevet major; mustered out, S. O. 237, A. G. O., May 19, 1866.
189. Fitzgerald, Edward... Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
190. Flagg, A. S... Captain and brevet major; mustered out, S. O. 272, A. G. O., June 8, 1866.
191. Fleming, John E... Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
192. Farr, E. P... Captain and brevet major; mustered out, S. O. 237, A. G. O., May 19, 1866.
193. Fish, Benjamin E... Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
194. Ferris, John W... Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
195. Fisher, Theo. B... Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
196. Folsom, C. W... Captain and brevet major.
197. Ford, C. W... Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
198. Fuller, James E... Captain; mustered out, S. O. 360, A. G. O., July 10, 1865.
199. Foote, Adrian... Captain; appointment cancelled, S. O. 417, A. G. O., August 3, 1865.
200. Garber, M. C... Captain and brevet colonel.
201. Goodrich, H. P... Captain; mustered out, S. O. 539, A. G. O., October 12, 1865.
202. Goodridge, M. H... Captain.
203. Gaubert, C. H... Captain; mustered out, S. O. 357, A. G. O., July 8, 1865.
204. Gardner, R. S... Captain and brevet major; mustered out, S. O. 112, A. G. O., March 13, 1866.
205. Goldie, William... Captain and brevet lieutenant colonel; mustered out, S. O. 626, A. G. O., December 2, 1865.
206. Gallagher, C. H... Captain; mustered out, S. O. 252, A. G. O., May 31, 1866.
207. Green, J. A... Captain and brevet major; mustered out, S. O. 574, A. G. O., October 30, 1865.
208. Gordon, D. D. T... Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
209. Gorton, C. L... Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
210. Greene, Elias M... Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
211. Gleason, James... Captain and brevet major.
212. Garvens, H... Captain; mustered out, S. O. 619, A. G. O., November 27, 1865.
213. Gross, W. L... Captain and brevet lieutenant colonel; mustered out, S. O. 252, A. G. O., June 5, 1866.
214. Giesy, Emanuel... Captain; mustered out, S. O. 360, A. G. O., July 10, 1865.
215. Graves, E. P... Captain and brevet major; mustered out, S. O. 181, A. G. O., April 20, 1866.
216. Gear, A. S... Captain and brevet major; mustered out, S. O. 181, A. G. O., April 27, 1866.
217. Gilbert, Morris J... Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
218. Gillum, H. H... Captain; mustered out, S. O. 537, A. G. O., October 11, 1865.
219. Garcelon, C. A... Captain; mustered out, S. O. 220, A. G. O., May 11, 1866.
220. Garoutte, A. M... Captain.
221. Gilmore, James R... Captain and brevet lieutenant colonel; mustered out, S. O. 252, A. G. O., June 5, 1866.
222. Goodman, Charles... Captain; mustered out, S. O. 556, A. G. O., October 19, 1865.
223. Goodwin, H. E... Captain; mustered out, S. O. 144, A. G. O., March 31, 1866.
224. Gerrish, Hiram F... Captain and brevet major; mustered out, S. O. 56, A. G. O., February 8, 1866.
225. Goslin, Alexander... Captain and brevet major.
226. Gerard, John C... Captain; mustered out, S. O. 252, A. G. O., June 10, 1866.
227. Grierson, John C... Captain.
228. Gilbreath, E. C... Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.

Names.	Rank, &c.
229. Hayes, Hiram.....	Captain and brevet lieutenant colonel; mustered out, S. O. 504 A. G. O., September 20, 1865.
230. Hoyt, Charles H.....	Captain and brevet brigadier general.
231. Hatch, R. B.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
232. Hoskins, S. W.....	Captain; mustered out, S. O. 630, A. G. O., December 8, 1865.
233. Howard, J. B.....	Captain and brevet colonel.
234. Hopkins, W. R.....	Captain and brevet major; mustered out, S. O. 237, A. G. O., May 31, 1866.
235. Heistand, Peter.....	Captain and brevet major; mustered out, S. O. 252, A. G. O., May 31, 1866.
236. Hart, Isaac W.....	Captain; mustered out, S. O. 112, A. G. O., March 13, 1866.
237. Hodge, Justin.....	Captain.
238. Hopkins, Charles.....	Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
239. Hoge, Holmes.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
240. Harrison, G. W.....	Captain and brevet major; mustered out, S. O. 24, A. G. O., January 18, 1866.
241. Holden, William.....	Captain and brevet major; mustered out, S. O. 241, A. G. O., April 20, 1866.
242. Haskell, J. G.....	Captain and brevet major; mustered out, S. O. 610, A. G. O., November 22, 1865.
243. Heany, Daniel.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
244. Howland, Henry.....	Captain and brevet major.
245. Hibbard, G. B.....	Captain and brevet major; mustered out, S. O. 9, A. G. O., January 8, 1866.
246. Hanna, B. J. F.....	Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
247. Hamill, S. R.....	Captain and brevet major.
248. Hart, R. S.....	Captain; mustered out, S. O. 237, A. G. O., May 19, 1866.
249. Hipple, Samuel.....	Captain; resignation accepted, S. O. 362, A. G. O., July 11, 1865.
250. Hunt, Thomas B.....	Captain and brevet major.
251. Hazelton, J. F.....	Captain and brevet major; mustered out, S. O. 626, A. G. O., December 2, 1865.
252. Hays, John.....	Captain; mustered out, S. O. 542, A. G. O., October 13, 1865.
253. Henry, C. A.....	Captain; mustered out, S. O. 556, A. G. O., October 19, 1865.
254. Howell, W. T.....	Captain and brevet lieutenant colonel; appointed assistant quartermaster U. S. A., October 26, 1865.
255. Healy, Jesse.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
256. How, W. Stover.....	Captain and brevet major; mustered out, S. O. 272, A. G. O., June 8, 1866.
257. Hoyt, James T.....	Captain and brevet major.
258. Harned, Sanford.....	Captain; mustered out, S. O. 125, A. G. O., March 20, 1866.
259. Hull, Alexander.....	Captain; mustered out, S. O. 564, A. G. O., October 23, 1865.
260. Heaton, G. L.....	Captain and brevet major; mustered out, S. O. 36, A. G. O., January 27, 1866.
261. Hay, Jr., Campbell....	Captain; mustered out, S. O. 610, A. G. O., November 22, 1865.
262. Hancock, F.....	Captain; mustered out, S. O. 220, A. G. O., May 11, 1866.
263. Hynes, John R.....	Captain and brevet major.
264. Hade, Emanuel.....	Captain; mustered out, S. O. 637, A. G. O., December 13, 1865.
265. Hall, George W.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
266. Henderson, James D....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
267. Holt, Charles W.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
268. Hill, Varnum H.....	Captain; mustered out, S. O. 637, A. G. O., December 13, 1865.
269. Hay, John S.....	Captain; mustered out, S. O. 353, A. G. O., July 6, 1865.
270. Isenstien, George.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
271. Irvin, C. H.....	Captain and brevet colonel.
272. Joel, E. M.....	Captain and brevet lieutenant colonel; mustered out, S. O. 9, A. G. O., January 8, 1866.
273. Johns, George W.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
274. Johnston, Thomas P....	Captain and brevet major.
275. Johnson, P. B.....	Captain; mustered out, S. O. 3, A. G. O., January 4, 1866.
276. James, W. L.....	Captain and brevet brigadier general.
277. Jennings, John R.....	Captain and brevet major.
278. Jones, J. E.....	Captain and brevet colonel; mustered out, S. O. 237, A. G. O., May 19, 1866.
279. James, Horace.....	Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
280. James, John H.....	Captain and brevet lieutenant colonel; mustered out, S. O. 237, A. G. O., May 19, 1866.
281. Johnson, H. W.....	Capt. and bvt. major; mustered out, S. O. 252, A. G. O., June 5, 1866.
282. Jones, Merritt B.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.

## Names.

## Rank, &amp;c.

283. Johnson, John E. . . . . Captain; mustered out, S. O. 504, A. G. O., September 20, '65.
284. Kimball, A. S. . . . . Capt. and bvt. major.
285. Klinck, J. G. . . . . Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
286. Kennedy, W. K. . . . . Captain; mustered out, S. O. 362, A. G. O., July 11, 1865.
287. Kimball, W. M. . . . . Capt. and bvt. lt. col.; mustered out, S. O. 24, A. G. O., January 18, 1866.
288. Kilgore, D. Y. . . . . Captain; mustered out, S. O. 458, A. G. O., August 28, 1865.
289. Kelly, John L. . . . . Captain; mustered out, S. O. 597, A. G. O., November 11, '65.
290. Kerr, Thomas J. . . . . Capt. and bvt. lt. col.; mustered out, S. O. 56, A. G. O., February 8, 1866.
291. Kirk, E. B. . . . . Capt. and bvt. major.
292. Kelley, jr., B. F. . . . . Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
293. Kerns, W. F. . . . . Captain; mustered out, S. O. 637, A. G. O., December 13, '65.
294. Keller, A. W. . . . . Captain; mustered out, S. O. 419, A. G. O., August 4, 1865.
295. Knight, J. Lee. . . . . Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
296. Kendall, Edward S. . . . . Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
297. Kitchen, Jos. C. . . . . Captain; mustered out, S. O. 24, A. G. O., January 18, 1866.
298. Knox, Robert T. . . . . Captain; appointment cancelled, S. O. 626, A. G. O., December 2, 1865.
299. Ludington, M. I. . . . . Capt. and bvt. brig. gen.
300. Le Duc, W. G. . . . . Capt. and bvt. brig. gen.; resignation accepted, S. O. 375, A. G. O., July 17, 1865.
301. Lawrence, A. B. . . . . Capt. and bvt. lt. col., mustered out, S. O. 113, A. G. O., March 12, 1866.
302. Leffingwell, C. W. . . . . Captain; mustered out, S. O. 629, A. G. O., December 6, 1865.
303. Lee, George W. . . . . Capt. and bvt. col.; mustered out, S. O. 252, A. G. O., May 31, 1866.
304. Lacey, H. B. . . . . Capt. and bvt. major; mustered out, S. O. 629, A. G. O., December 6, 1865.
305. Lacey, H. A. . . . . Capt. and bvt. major; mustered out, S. O. 112, A. G. O., March 13, 1866.
306. Lamb, S. T. . . . . Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
307. Lynch, J. A. . . . . Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
308. Low, James P. . . . . Capt. and bvt. lt. col.
309. Lappin, Sam'l. . . . . Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
310. Lunt, S. H. . . . . Captain; died July 28, 1865.
311. Lambert, W. H. . . . . Capt. and bvt. maj.; mustered out, S. O. 112, A. G. O., March 13, 1866.
312. Lynch, S. G. . . . . Capt. and bvt. lt. col.; mustered out, S. O. 252, A. G. O., June 5, 1866.
313. Lauffer, S. B. . . . . Captain; mustered out, S. O. 243, A. G. O., April 30, 1866.
314. Lawrence, H. C. . . . . Capt. and bvt. major; mustered out, S. O. 181, A. G. O., April 20, 1866.
315. Lacey, R. S. . . . . Capt. and bvt. major.
316. Low, jr., Nathaniel. . . . . Captain; mustered out, S. O. 45, A. G. O., February 2, 1866.
317. Ladd, George P. . . . . Captain.
318. Lyon, F. . . . . Capt. and bvt. major; mustered out, S. O. 125, A. G. O., March 20, 1866.
319. Lentz, D. H. . . . . Captain; mustered out, S. O. 252, A. G. O., June 5, 1866.
320. Lockwood, George . . . . . Captain.
321. Lloyd, A. J. . . . . Captain; mustered out, S. O. 404, A. G. O., July 28, 1866.
322. Lake, C. A. . . . . Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
323. Landis, F. B. . . . . Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
324. Lapham, W. B. . . . . Capt. and bvt. major; mustered out, S. O. 574, A. G. O., October 30, 1865.
325. Luther, Henry E. . . . . Captain; mustered out, S. O. 419, A. G. O., August 4, 1865.
326. Lockerby, A. P. . . . . Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
327. Loring, C. G. . . . . Captain; mustered out, S. O. 431, A. G. O., August 10, 1865.
328. Lyman, C. W. . . . . Captain; mustered out, S. O. 581, A. G. O., November 3, 1865.
329. Mackay, A. J. . . . . Capt. and bvt. brig. gen.; mustered out, S. O. 629, A. G. O., December 6, 1865.
330. Morford, W. E. . . . . Captain.
331. Moer, Samuel H. . . . . Captain; died July 28, 1865.
332. McClung, D. W. . . . . Captain; mustered out, S. O. 590, A. G. O., November 8, 1865.
333. Moore, L. Lowry. . . . . Capt. and bvt. major.
334. Moore, John H. . . . . Captain; died November 11, 1865.

Names.	Rank, &c.
335. Morris, W. G.....	Capt. and bvt. major; mustered out, S. O. 56, A. G. O., February 8, 1866.
336. Morgan, R. C.....	Capt. and bvt. major.
337. Martin, Malachi.....	Captain; mustered out, S. O. 112, A. G. O., March 13, 1866.
338. Metcalf, L. S.....	Captain and brevet colonel; mustered out, S. O. 3, A. G. O., January 4, 1866.
339. Mills, A. H.....	Captain.
340. Morse, E. A.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
341. Mandeville, M. H.....	Captain and brevet major; mustered out, S. O. 112, A. G. O., March 13, 1866.
342. Mullen, Loudon.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
343. Miller, Herman.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
344. McKusick, J. E.....	Captain; mustered out, S. O. 303, A. G. O., June 27, 1866.
345. Mead, George U.....	Captain; mustered out, S. O. 619, A. G. O., November 27, 1865.
346. Mason, Isaac N.....	Captain; mustered out, S. O. 252, A. G. O., May 31, 1866.
347. McKim, John W.....	Captain and brevet major.
348. Manning, S. H.....	Captain and brevet lieutenant colonel.
349. McIntosh, Alexander..	Captain; mustered out, S. O. 181, A. G. O., April 20, 1866.
350. McCormick, R. A.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
351. Mann, J. C.....	Captain and brevet major.
352. McEntee, C. S.....	Captain; mustered out, S. O. 576, A. G. O., October 31, 1865.
353. McCall, T. C.....	Captain; mustered out, S. O. 619, A. G. O., November 27, 1865.
354. Mason, Albert.....	Captain; mustered out, S. O. 574, A. G. O., October 30, 1865.
355. Mason, George W.....	Captain; mustered out, S. O. 629, A. G. O., December 6, 1865.
356. McClellan, J. J.....	Captain; mustered out, S. O. 237, A. G. O., May 19, 1866.
357. McElroy, Frank G.....	Captain; mustered out, S. O. 570, A. G. O., October 26, 1865.
358. Merritt, C. M.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
359. Marshall, G. W.....	Captain and brevet major.
360. McDermid, J. J.....	Captain.
361. Mower, George H.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
362. McCullough, W. P.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
363. Marston, H. C.....	Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
364. McKenzie, Alexander..	Captain; mustered out, S. O. 440, A. G. O., August 15, 1865.
365. Mitchell, Frank A.....	Captain; appointment cancelled, S. O. 522, A. G. O., September 30, 1865.
366. Munson, Samuel.....	Captain; mustered out, S. O. 303, A. G. O., June 27, 1866.
367. Morton, G. C.....	Captain; appointment cancelled, S. O. 522, A. G. O., September 30, 1865.
368. McKinney, D.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
369. Newport, R. M.....	Captain and brevet colonel; resignation accepted, S. O. 60, A. G. O., February 7, 1866.
370. Noble, Henry T.....	Captain and brevet colonel.
371. Nesmith, A. S.....	Captain; mustered out, S. O. 353, A. G. O., July 6, 1865.
372. Norton, G. A.....	Captain; mustered out, S. O. 590, A. G. O., November 8, 1865.
373. Norcross, F. M.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
374. Nisson, N. I. I.....	Captain; mustered out, S. O. 619, A. G. O., November 27, 1865.
375. Neale, W. L.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
376. Nash, C. W.....	Captain and brevet major; mustered out, S. O. 303, A. G. O., June 27, 1866.
377. Oakley, F. W.....	Captain; mustered out, S. O. 431, A. G. O., August 10, 1865.
378. Orme, George R.....	Captain and brevet major.
379. Owen, R. B.....	Captain.
380. Owens, John P.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
381. Pierce, G. A.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
382. Page, Henry.....	Captain and brevet colonel.
383. Plumb, Ralph.....	Captain; mustered out, S. O. 597, A. G. O., November 11, 1865.
384. Porter, B. F.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
385. Plato, Nelson.....	Captain and brevet lieutenant colonel.
386. Perkins, F. W.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
387. Porter, D. W.....	Captain; mustered out, S. O. 3, A. G. O., January 4, 1866.
388. Peugeot, E.....	Captain; mustered out, S. O. 570, A. G. O., October 26, 1865.
389. Pratt, J. H.....	Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
390. Parker, G. L.....	Captain and brevet lieutenant colonel; mustered out, S. O. 252, A. G. O., May 28, 1866.
391. Potter, O. O.....	Captain and brevet lieutenant colonel; mustered out, S. O. 24, A. G. O., January 18, 1866.
392. Phelps, A. J.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
393. Perce, L. W.....	Captain; mustered out, S. O. 419, A. G. O., August 4, 1865.

## Names.

## Rank, &amp;c.

394. Purnell, T. T ..... Captain; mustered out, S. O. 125, A. G. O., March 20, 1866.
395. Persing, H. W. .... Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
396. Palmer, Thomas ..... Capt. and bvt. maj.; mustered out, S. O. 125, A. G. O., March 20, 1866.
397. Power, John ..... Captain; mustered out, S. O. 181, A. G. O., April 20, 1866.
398. Powers, Joseph T. .... Capt. and bvt. major.
399. Pearman, J. W. .... Captain.
400. Patterson, H. S. .... Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
401. Payne, James G. .... Captain.
402. Penney, Richard ..... Captain; mustered out, S. O. 125, A. G. O., March 20, 1866.
403. Parks, John ..... Capt. and bvt. col.; mustered out, S. O. 113, A. G. O., March 12, 1866.
404. Poor, Leander A. .... Capt. and bvt. major; mustered out, S. O. 237, A. G. O., May 19, 1866.
405. Purse, William H. .... Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
406. Peters, Joseph ..... Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
407. Purington, D. V. .... Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
408. Peck, T. S. .... Captain; appointment cancelled, S. O. 354, A. G. O., July 20, 1865.
409. Pierson, H. R. .... Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
410. Robinson, H. L. .... Capt. and bvt. brig. gen.
411. Rutherford, G. V. .... Capt. and bvt. brig. gen.
412. Russell, J. K. .... Captain; mustered out, S. O. 181, A. G. O., April 20, 1866.
413. Rusling, James T. .... Capt. and bvt. brig. gen.
414. Rapelje, J. T. .... Captain; mustered out, S. O. 564, A. G. O., October 23, 1865.
415. Rundle, S. E. .... Captain; mustered out, S. O. 630, A. G. O., December 8, 1865.
416. Restieaux, E. B. W. .... Captain.
417. Reichenbach, E. C. .... Capt. and bvt. major.
418. Rutherford, John C. .... Capt. and bvt. major; mustered out, S. O. 272, A. G. O., June 8, 1866.
419. Rasin, Hanson ..... Captain; mustered out, S. O. 564, A. G. O., October 23, 1865.
420. Reno, J. M. .... Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
421. Roney, S. B. .... Captain; mustered out, S. O. 637, A. G. O., December 13, 1865.
422. Remington, J. E. .... Capt. and bvt. lt. col.; mustered out, S. O. 113, A. G. O., March 12, 1866.
423. Rankin, W. A. .... Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
424. Reynolds, C. H. .... Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
425. Rynerson, W. L. .... Captain.
426. Routt, J. L. .... Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
427. Rutherford, R. C. .... Captain.
428. Royce, H. A. .... Capt. and bvt. major.
429. Rood, Anson ..... Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
430. Stinson, Daniel ..... Capt. and bvt. col.; mustered out, S. O. 252, A. G. O., May 31, 1866.
431. Stager, Anson ..... Capt. and bvt. brig. gen.; dropped, being col. A. D. C., mem., A. G. O., May 28, 1866.
432. Shallenberger, G. A. .... Capt. and bvt. lt. col.; mustered out, S. O. 590, A. G. O., November 8, 1865.
433. Swope, R. C. .... Capt. and bvt. major.
434. Swain, J. A. .... Capt. and bvt. lt. col.; mustered out, S. O. 9, A. G. O., January 8, 1866.
435. Smith, Hiram ..... Captain; mustered out, S. O. 353, A. G. O., July 6, 1865.
436. Smith, jr., C. K. .... Capt. and bvt. major.
437. Shepherd, L. W. .... Capt. and bvt. lt. col.; mustered out, S. O. 531, A. G. O., October 9, 1865.
438. Stubbs, J. D. .... Capt. and bvt. lt. col.
439. Stewart, John ..... Capt. and bvt. major; mustered out, S. O. 9, A. G. O., January 8, 1866.
440. Swasey, W. T. .... Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
441. Sampson, C. M. .... Captain; mustered out, S. O. 564, A. G. O., October 23, 1865.
442. Stover, D. B. .... Captain; mustered out, S. O. 158, A. G. O., April 7, 1866.
443. Starkweather, F. T. .... Captain; resignation accepted, S. O. 610, A. G. O., November 22, 1865.
444. Seely, F. A. .... Capt. and bvt. major.
445. Suydam, S. P. .... Captain; mustered out, S. O. 24, A. G. O., January 18, 1866.
446. Staples, R. G. .... Capt. and bvt. major; mustered out, S. O. 252, A. G. O., May 31, 1866.



Names.	Rank, &c.
447. Strang, E. J.....	Capt. and bvt. lt. col.
448. Starr, S. S.....	Captain; mustered out, S. O. 539, A. G. O., October 12, 1865.
449. Schenck, John.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
450. Scott, Jesse E.....	Captain; mustered out, S. O. 3, A. G. O., January 4, 1866.
451. Skinner, Holly.....	Capt. and bvt. lt. col.
452. Summers, Moses.....	Capt. and bvt. major; mustered out, S. O. 504, A. G. O., September 20, 1865.
453. Seelye, Edgar.....	Capt. and bvt. major; mustered out, S. O. 81, A. G. O., February 21, 1866.
454. Schenck, jr., J. W....	Captain; mustered out, S. O. 619, A. G. O., Nov. 27, 1865.
455. Smith, E. J.....	Capt. and bvt. major; mustered out, S. O. 322, A. G. O., June 30, 1866.
456. Sawyer, F. O.....	Captain; mustered out, S. O. 252, A. G. O., May 31, 1866.
457. Sellers, A. J.....	Captain; mustered out, S. O. 576, A. G. O., October 31, 1865.
458. Scott, D. W.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
459. Smith, G. C.....	Captain.
460. Spicer, Simeon.....	Captain; mustered out, S. O. 504, A. G. O., Sept. 20, 1865.
461. Smith, A. P.....	Captain; mustered out, S. O. 504, A. G. O., Sept. 20, 1865.
462. Smith, H. M.....	Capt. and bvt. major; mustered out, S. O. 113, A. G. O., March 12, 1866.
463. Saxton, Valentine.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
464. Stokes, Charles M.....	Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
465. Starks, W. M.....	Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
466. Stephens, C. B.....	Captain; mustered out, S. O. 504, A. G. O., Sept. 20, 1865.
467. Sauvinet, C. S.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
468. Shindle, J. A.....	Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
469. Stoddard, C. B.....	Captain; mustered out, S. O. 438, A. G. O., Aug. 14, 1865.
470. Stockwell, A. J.....	Captain; mustered out, S. O. 539, A. G. O., October 12, 1865.
471. Tallman, J. H.....	Captain; dismissed, S. O. 79, A. G. O., February 20, 1866.
472. Thomas, A. L.....	Captain; resignation accepted, S. O. 526, A. G. O., October 3, 1865.
473. Tyler, C. R.....	Capt. and bvt. major; mustered out, S. O. 252, A. G. O., June 5, 1866.
474. Tighe, J. H.....	Captain; mustered out, S. O. 252, A. G. O., June 5, 1866.
475. Tucker, A. M.....	Capt. and bvt. lt. col.; mustered out, S. O. 630, A. G. O., December 8, 1865.
476. Thayer, H. L.....	Captain.
477. Thomas, E. J.....	Captain; mustered out, S. O. 360, A. G. O., July 10, 1865.
478. Thompson, James.....	Captain; mustered out, S. O. 504, A. G. O., Sept. 20, 1865.
479. Trumbull, J. L.....	Capt. and bvt. lt. col.; mustered out, S. O. 252, A. G. O., May 31, 1865.
480. Tredway, J. D.....	Capt. and bvt. major; mustered out, S. O. 125, A. G. O., March 20, 1866.
481. Tuttle, Joseph.....	Captain.
482. Todhunter, Lewis.....	Captain; mustered out, S. O. 504, A. G. O., Sept. 20, 1866.
483. Taylor, Edward P.....	Captain; mustered out, S. O. 630, A. G. O., Dec. 8, 1865.
484. Tracy, Henry E.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
485. Van Vliet, W. A.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
486. Van Vliet, L. S.....	Capt. and bvt. major; mustered out, S. O. 144, A. G. O., March 30, 1866.
487. Van Ness, W. W.....	Captain; mustered out, S. O. 113, A. G. O., March 13, 1866.
488. Van Slyke, N. B.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
489. Vance, Geo. C.....	Captain; mustered out, S. O. 504, A. G. O., Sept. 20, 1865.
490. Van Duzer, John C.....	Capt. and bvt. lt. col.; mustered out, S. O. 252, A. G. O., June 5, 1866.
491. Van Patten, J. S.....	Capt. and bvt. major; mustered out, S. O. 581, A. G. O., November 8, 1865.
492. Van Valkenburg, B. J.	Captain; mustered out, S. O. 440, A. G. O., August 15, 1865.
493. Voges, Theodore.....	Captain; mustered out, S. O. 440, A. G. O., August 15, 1865.
494. Viall, J. G.....	Captain; mustered out, S. O. 597, A. G. O., Nov. 11, 1865.
495. Vandergrift, C. C.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
496. Wise, Geo. D.....	Capt. and bvt. brig. gen.
497. Webster, R. C.....	Capt. and bvt. col.
498. Wagner C. B.....	Capt. and bvt. col.
499. Wing, C. T.....	Capt. and bvt. col.; mustered out, S. O. 36, A. G. O., January 21, 1866.



Names.	Rank, &c.
500. Wing, J. K.....	Captain; mustered out, S. O. 431, A. G. O., August 10, 1865.
501. Wendell, W. H.....	Captain; mustered out, S. O. 590, A. G. O., Nov. 8, 1865.
502. Webster, G. P.....	Capt. and bvt. col.
503. White, Geo. Q.....	Capt. and bvt. major.
504. Winslow, J. B.....	Captain; mustered out, S. O. 9, A. G. O., January 8, 1866.
505. Wilson, E. C.....	Captain; mustered out, S. O. 24, A. G. O., January 18, 1866.
506. Welch, D. N.....	Captain; mustered out, S. O. 81, A. G. O., February 21, 1866.
507. Webster, C. D.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
508. Webster, Amos.....	Capt. and bvt. major.
509. Wilson, James.....	Capt. and bvt. lt. col.; mustered out, S. O. 629, A. G. O., December 6, 1865.
510. Wilson, Thos. P.....	Capt. and bvt. major.
511. Winslow, G. C.....	Capt. and bvt. lt. col.; mustered out, S. O. 181, A. G. O., April 20, 1866.
512. Whitman, E. B.....	Capt. and bvt. major.
513. Woodbridge, G. W.....	Captain; appointment cancelled, S. O. 365, A. G. O., July 12, 1865.
514. Whipple, John.....	Captain; mustered out, S. O. 237, A. G. O., May 19, 1866.
515. Wickizer, J. H.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1866.
516. Woods, John L.....	Capt. and bvt. major.
517. Wells, G. W.....	Capt. and bvt. major; mustered out, S. O. 252, A. G. O., May 31, 1866.
518. Wilder, C. B.....	Captain; mustered out, S. O. 144, A. G. O., March 30, 1866.
519. Wright, Sam'l I.....	Captain.
520. Wheeler, U. H.....	Captain; mustered out, S. O. 125, A. G. O., March 20, 1866.
521. Wainwright, W. A.....	Capt. and bvt. major.
522. Whetsel, H. B.....	Capt. and bvt. major; mustered out, S. O. 237, A. G. O., May 19, 1866.
523. Wadsworth, E. L.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
524. Willey, G. F. W.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
525. Wills, Jesse E.....	Captain; mustered out, S. O. 24, A. G. O., January 18, 1866.
526. Whitney, Leonard.....	Captain; mustered out, S. O. 252, A. G. O., May 31, 1866.
527. Whittemore, G. A.....	Captain; mustered out, S. O. 630, A. G. O., December 8, 1865.
528. Whittemore, C. B.....	Capt. and bvt. major; mustered out, S. O. 574, A. G. O., October 30, 1865.
529. Woods, Wm. M.....	Captain; mustered out, S. O. 590, A. G. O., November 8, 1865.
530. Whitcomb, J. R.....	Captain; mustered out, S. O. 252, A. G. O., May 28, 1865.
531. Wever, Frank M.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
532. Whittingham, J.....	Captain; mustered out, S. O. 431, A. G. O., August 10, 1865.
533. Watson, C. T.....	Capt. and bvt. major.
534. Wheeler, P. A.....	Captain; mustered out, S. O. 583, A. G. O., November 4, 1865.
535. Wilson, J. H.....	Captain; mustered out, S. O. 113, A. G. O., March 12, 1866.
536. Whytal, T. G.....	Capt. and bvt. lt. col.
537. Wickersham, M. D.....	Capt. and bvt. lt. col.
538. Walbridge, C. E.....	Captain; mustered out, S. O. 531, A. G. O., October 7, 1865.
539. Wills, A. W.....	Capt. and bvt. major.
540. Warren, W. A.....	Captain; mustered out, S. O. 504, A. G. O., September 20, 1865.
541. Wray, James T.....	Capt. and bvt. major; mustered out, S. O. 504, A. G. O., September 20, 1865; date extended to December 31, 1865, by S. O. 120, A. G. O., March 16, 1866.
542. Whittlesey, H. M.....	Capt. and bvt. brig. gen.
543. Webster, J. R.....	Captain; mustered out, S. O., 431, A. G. O., August 10, 1865.
544. Westbrook, R. L.....	Capt. and bvt. lt. col.; mustered out, S. O. 24, A. G. O., January 18, 1866.
545. Whitney, J. C.....	Captain; mustered out, S. O. 619, A. G. O., November 27, 1865.
546. White, Frank H.....	Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
547. Weave, Charles.....	Captain; appointment cancelled, S. O. 448, A. G. O., August 19, 1865.
548. Wardwell, E. H.....	Captain; mustered out, S. O. 404, A. G. O., July 28, 1865.
549. Woodall, James T.....	Captain.
550. Williamson, D. J.....	Captain.
551. Wilmot, E.....	Captain; appointment cancelled, S. O. 522, A. G. O., September 30, 1865.
552. Willock, J. J.....	Captain; appointment cancelled, S. O. 522, A. G. O., September 30, 1855.
553. Weeks, Geo. D.....	Captain; mustered out, S. O. 556, A. G. O., October 23, 1865.

## RECAPITULATION.

Number in service July 1, 1865.....	553
Honorably mustered out during fiscal year.....	402
Appointments cancelled during fiscal year.....	22
Resignations accepted during fiscal year.....	7
Appointments vacated during fiscal year.....	1
Dropped being aide-de-camp during fiscal year.....	2
Dismissed during fiscal year.....	1
Transferred to United States army during fiscal year.....	3
Deceased during fiscal year.....	4
Number in service July 1, 1866.....	111

Respectfully submitted :

JOHN V. FUREY,  
Brevet Major, Assistant Quartermaster.

*Report of officers of the Quartermaster's Department of the volunteer service mustered out, transferred to United States army, dismissed the service of the United States, from 1st of July, 1866, to 30th of September, 1866.*

Names.	Rank, &c.
1. Artsman, Gustavus.....	Captain; mustered out, S. O. 379, A. G. O., August 3, 1866.
2. Barnes, Stuart.....	Capt. and bvt. lt. col.; mustered out, S. O. 326, A. G. O., July 9, 1866.
3. Bowman, Henry.....	Capt. and bvt. major; mustered out, S. O. 341, A. G. O., July 17, 1866.
4. Brinkerhoff, R.....	Capt. and bvt. brig. gen.; mustered out, S. O. 473, A. G. O., Sept. 24, 1866.
5. Belcher, J. H.....	Captain; appointed A. Q. M., U. S. A., July 16, 1866.
6. Crandon, T. F. P.....	Capt. and bvt. major; mustered out, S. O. 322, A. G. O., July 7, 1866.
7. Camp, Erskine M.....	Capt. and bvt. major; mustered out, S. O. 327, A. G. O., July 10, 1866.
8. Conn, Alexander.....	Capt. and bvt. major; mustered out, S. O. 334, A. G. O., July 13, 1866.
9. Childs, Samuel D.....	Captain; mustered out, S. O. 439, A. G. O., Sept. 3, 1866.
10. Campbell, James.....	Capt. and bvt. major; mustered out, S. O. 450, A. G. O., Sept. 10, 1866.
11. Cadwallader, G. B.....	Capt. and bvt. colonel; mustered out, S. O. 450, A. G. O., Sept. 10, 1866.
12. Churchill, Jas. O.....	Capt. and bvt. lt. col.; mustered out, S. O. 459, A. G. O., Sept. 14, 1866.
13. Daniels, W. H.....	Capt. and bvt. major; mustered out, S. O. 450, A. G. O., Sept. 10, 1866.
14. Garber, M. C.....	Capt. and bvt. colonel; mustered out, S. O. 354, A. G. O., July 23, 1866.
15. Goodridge, M. H.....	Captain; mustered out, S. O. 459, A. G. O., Sept. 14, 1866.
16. Garoutte, A. M.....	Captain; dismissed, G. O. 21, Headquarters, Dept. of Carolinas, August 14, 1866.
17. James, W. L.....	Capt. and bvt. brig. gen.; mustered out, S. O. 352, A. G. O., July 21, 1866.
18. Jennings, John R.....	Capt. and bvt. major; mustered out, S. O. 450, A. G. O., Sept. 10, 1866.
19. Lacey, R. S.....	Capt. and bvt. major; mustered out, S. O. 298, A. G. O., June 23, 1866.
20. Lockwood, Geo.....	Captain; mustered out, S. O. 334, A. G. O., July 13, 1866.
21. Ladd, Geo. P.....	Captain; mustered out, S. O. 417, A. G. O., Aug. 21, 1866.
22. McDermid, J. J.....	Capt. and bvt. lt. col.; mustered out, S. O. 417, A. G. O., Aug. 21, 1866.
23. Morford, W. E.....	Captain; mustered out, S. O. 450, A. G. O., Sept. 10, 1866.
24. Mills, A. H.....	Captain; mustered out, S. O. 454, A. G. O., Sept. 12, 1866.
25. Plato, Nelson.....	Capt. and bvt. lt. col.; mustered out, S. O. 417, A. G. O., Aug. 21, 1866.
26. Pearman, J. W.....	Captain; mustered out, S. O. 471, A. G. O., Sept. 22, 1866.

Names.	Rank, &c.
27. Reichenbach, E. C . . . . .	Capt. and bvt. major; mustered out, S. O. 334, A. G. O., July 13, 1866.
28. Swope, R. C . . . . .	Capt. and bvt. major; mustered out, S. O. 379, A. G. O., Aug. 3, 1866.
29. Williamson, D. J . . . . .	Captain; mustered out, S. O. 334, A. G. O., July 13, 1866.
30. Wilson, Thos. P . . . . .	Capt. and bvt. major; mustered out, S. O. 417, A. G. O., Aug. 21, 1866.
31. Wickersham, M. D . . . . .	Capt. and bvt. lt. col.; mustered out, S. O. 473, A. G. O., Sept. 24, 1866.
32. Cox, Thomas J . . . . .	Capt. and bvt. col.; mustered out. S. O. 288, A. G. O., June 18, 1866, to take effect August 1, 1866

Transferred to United States army, 1; mustered out, 30; dismissed, 1.

Respectfully submitted:

JOHN V. FUREY,  
Brevet Major, Assistant Quartermaster.

*List of officers serving at depots other than principal depots during the fiscal year ending June 30, 1866.*

Captain J. W. McKim, (brevet major,) A. Q. M. of Vols., Boston, Mass.  
 Captain W. A. Wainwright, A. Q. M. of Vols., Chattanooga, Tenn.  
 Lieut. Col. Robert E. Clary, (brevet brigadier general,) Deputy Q. M. Gen. U. S. A., Memphis, Tenn.  
 Captain Geo. T. Browning, (brevet major,) A. Q. M. of Vols., Giesboro', D. C.  
 Lieut. Col. Osborne Cross, Deputy Q. M. Gen., U. S. A. Pittsburg, Penn.  
 Captain Henry Inman, A. Q. M. U. S. A., Portland, Me.  
 Major R. W. Kirkham, (brevet lieut. colonel,) Q. M. U. S. A., San Francisco, Cal.  
 Captain J. G. C. Lee, (brevet lieut. colonel,) A. Q. M. U. S. A., Alexandria, Va.  
 Captain A. C. Woolfolk, (brevet major,) A. Q. M. U. S. A., Cairo, Ill.  
 Captain J. W. Pearman, A. Q. M. of Vols., Davenport, Iowa.  
 Captain E. C. Reichenbach, (brevet major,) A. Q. M. of Vols., Harrisburg, Penn.

Respectfully submitted:

JOHN V. FUREY,  
Brevet Major, Assistant Quartermaster.

*List of principal depots, with the names of officers in charge, during the fiscal year ending June 30, 1866.*

Brevet Brigadier General D. H. Vinton, Deputy Q. M. Gen. U. S. A., New York, N. Y.  
 Colonel W. W. McKim, A. Q. M. U. S. A., Philadelphia, Pa.  
 Brevet Brigadier General G. H. Crosman, Asst. Q. M. Gen. U. S. A., Philadelphia, Pa.  
 Brevet Major General D. H. Rucker, Q. M. U. S. A., Washington, D. C.  
 Colonel R. M. Newport, A. Q. M. of Vols., Baltimore, Md.  
 Colonel G. W. Bradley, A. Q. M. U. S. A., Baltimore, Md.  
 Colonel J. A. Elison, A. Q. M. U. S. Vols., Chicago, Ill.  
 Brevet Lieutenant Colonel L. H. Pierce, A. Q. M. U. S. A., Chicago, Ill.  
 Brevet Brigadier General J. A. Potter, A. Q. M. U. S. A., Fort Leavenworth, Ks.  
 Colonel George W. Lee, A. Q. M. U. S. Vols., Detroit, Mich.  
 Brevet Brigadier General William Myers, A. Q. M. U. S. A., St. Louis, Mo.  
 Colonel George F. Clark, A. Q. M. U. S. Vols., Louisville, Ky.  
 Colonel C. W. Moulton, A. Q. M. U. S. A., Cincinnati, Ohio.  
 Colonel R. Brinkerhoff, A. Q. M. U. S. Vols., Cincinnati, Ohio.  
 Colonel Raymond Burr, A. Q. M. U. S. Vols., Columbus, Ohio.  
 Brevet Colonel J. G. Chandler, A. Q. M. U. S. A., New Orleans, La.  
 Colonel C. G. Sawtelle, A. Q. M. U. S. A., New Orleans, La.  
 Brevet Brigadier General A. P. Blunt, A. Q. M. U. S. Vols., Fortress Monroe, Va.  
 Colonel R. C. Rutherford, A. Q. M. U. S. Vols., Jeffersonville, Ind.

Respectfully submitted:

JOHN V. FUREY,  
Brevet Major, Assistant Quartermaster.

*List of inspectors in the Quartermaster's Department during the fiscal year ending June 30, 1866.*

Brevet Brigadier General J. D. Bingham, A. Q. M. U. S. A.  
 Brevet Brigadier General C. H. Tompkins, A. Q. M. U. S. A.  
 Brevet Brigadier General Herman Biggs, A. Q. M. U. S. A. Out of service; resignation accepted October 11, 1865.  
 Brevet Brigadier General J. F. Rusling, A. Q. M. of Vols.  
 Colonel R. Brinkerhoff, A. Q. M. U. S. Vols.  
 Colonel J. D. Cruttenden, A. Q. M. U. S. Vols.  
 Colonel J. C. Crane, A. Q. M. U. S. Vols.

Respectfully submitted :

JOHN V. FUREY,  
 Brevet Major, Assistant Quartermaster.

*List of officers who have served as chief quartermasters of armies during the fiscal year ending June 30, 1866.*

Brevet Brigadier General L. C. Easton, Q. M. U. S. A., Sherman's army.  
 Brevet Brigadier General A. J. Mackay, A. Q. M. U. S. Vols., army of the Cumberland.  
 Colonel R. N. Batchelder, A. Q. M. U. S. A., brevet brigadier general of volunteers, army of the Potomac.  
 Brevet Brigadier General H. M. Whittlesey, A. Q. M. of Vols., army of Georgia.  
 Brevet Major General R. Ingalls, Q. M. U. S. A., armies operating against Richmond.

Respectfully submitted :

JOHN V. FUREY,  
 Brevet Major, Assistant Quartermaster.

*List of officers in charge of divisions, Quartermaster General's office, during the fiscal year ending June 30, 1865.*

Brevet Brigadier General James A. Ekin, A. Q. M. U. S. A., 1st division.  
 Brevet Brigadier General A. J. Perry, A. Q. M. U. S. A., 2d division.  
 Brevet Brigadier General George D. Wise, A. Q. M. of Vols., 3d division.  
 Brigadier General L. B. Parsons, U. S. Vols., 4th division; relieved August 18, 1865.  
 Colonel Alexander Bliss, A. Q. M. U. S. A., 4th division; assigned May 7, 1866.  
 Brevet Brigadier General S. L. Brown, A. Q. M. of Vols., 5th division.  
 Brevet Brigadier General J. J. Dana, A. Q. M. U. S. A., 6th division.  
 Brevet Brigadier General Benjamin C. Card, A. Q. M. U. S. A., 7th division; acting.  
 Brevet Brigadier General George V. Rutherford, A. Q. M. of Vols., 8th division.  
 Brevet Brigadier General Benjamin C. Card, A. Q. M. U. S. A., 9th division.

Respectfully submitted :

JOHN V. FUREY,  
 Brevet Major, Assistant Quartermaster.

*List of officers who have served as senior and supervising and chief quartermasters of military divisions during the fiscal year ending June 30, 1865.*

Brevet Brigadier General L. C. Easton, Q. M. U. S. A., senior and supervising Q. M. of the military division of the Mississippi.  
 Brevet Major General J. L. Donaldson, Q. M. U. S. A., chief Q. M. of the military division of Tennessee.  
 Colonel C. G. Sawtelle, A. Q. M. U. S. A., chief Q. M. of the military division of the Gulf.  
 Colonel E. B. Babbitt, deputy Q. M. Gen. U. S. A., senior and supervising Q. M. of the military division of the Pacific.  
 No assignment to the military division of the Atlantic.

Respectfully submitted :

JOHN V. FUREY,  
 Brevet Major, Assistant Quartermaster.

*List of officers who have served as chief quartermasters of military departments during the fiscal year ending June 30, 1866.*

Brevet Major General S. Van Vliet, Q. M. U. S. A., department of the east.  
 Colonel G. W. Bradley, A. Q. M. U. S. A., middle department.  
 Brevet Brigadier General M. I. Ludington, A. Q. M. U. S. vols., department of Washington.  
 Brevet Brigadier General C. H. Hoyt, A. Q. M. U. S. vols., department of Ohio.  
 Brevet Brigadier General A. J. Mackay, A. Q. M. U. S. vols., department of Tennessee.  
 Brevet Lieut. Colonel A. R. Eddy, A. Q. M. U. S. A., department of Tennessee.  
 Colonel Henry Howland, A. Q. M. U. S. vols., department of Kentucky.  
 Brevet Colonel R. N. Batchelder, A. Q. M. U. S. A., department of Kentucky.  
 Brevet Brigadier General Frederick Myers, Q. M. U. S. A., department of Missouri.  
 Brevet Brigadier General L. C. Easton, Q. M. U. S. A., department of Missouri.  
 Brevet Brigadier General W. L. James, A. Q. M. U. S. vols., department of Virginia.  
 Brevet Brigadier General J. F. Boyd, A. Q. M. U. S. vols., department of North Carolina.  
 Colonel M. C. Garber, A. Q. M. U. S. vols., department of North Carolina.  
 Brevet Lieut. Colonel C. W. Thomas, A. Q. M. U. S. A., department of South Carolina.  
 Captain J. K. Russell, A. Q. M. U. S. A., (acting,) department of Florida.  
 Brevet Lieut. Colonel W. L. Lothrop, A. Q. M. U. S. A., department of Florida.  
 Colonel C. K. Smith, jr., A. Q. M. U. S. vols., department of Georgia.  
 Brevet Brigadier General H. M. Whittlesey, A. Q. M. U. S. vols., department of the Mississippi.  
 Captain John Stewart, A. Q. M. U. S. vols., (acting,) department of Alabama.  
 Colonel M. D. Wickersham, A. Q. M. U. S. vols., department of Alabama.  
 Colonel S. B. Holabird, A. Q. M. U. S. A., department of Louisiana.  
 Colonel S. H. Manning, A. Q. M. U. S. vols., department of Texas.  
 Colonel H. T. Noble, A. Q. M. U. S. vols., department of Arkansas.  
 Captain Geo. H. Weeks, A. Q. M. U. S. A., (acting,) department of Columbia.  
 Brevet Lieut. Colonel H. C. Hodges, A. Q. M. U. S. A., department of Columbia.  
 Colonel E. B. Babbitt, deputy Q. M. Gen. U. S. A., department of California.  
 Brevet Brigadier General Wm. Myers, A. Q. M. U. S. A., department of the Platte.  
 Brevet Lieut. Colonel C. W. Thomas, A. Q. M. U. S. A., department of the Carolinas.  
 Colonel M. D. Wickersham, A. Q. M. U. S. vols., department of the south.  
 Brevet Brigadier General R. E. Clary, deputy Q. M. Gen. U. S. A., department of the Cumberlandland.  
 Colonel Herbert M. Enos, A. Q. M. U. S. A., department of New Mexico.

Respectfully submitted :

JOHN V. FUREY,  
*Brevet Major, Assistant Quartermaster.*

*List of officers who have served as chief quartermasters of corps during the fiscal year ending June 30, 1866.*

Brevet Brigadier General C. H. Tompkins, A. Q. M. U. S. A., 1st corps.  
 Lieutenant Colonel G. A. Shallenberger, A. Q. M. U. S. vols., 2d corps.  
 Lieutenant Colonel Hiram Hayes, A. Q. M. U. S. vols., 4th corps.  
 Lieutenant Colonel C. A. Henry, A. Q. M. U. S. vols., 7th corps.  
 Lieutenant Colonel Alexander Bliss, A. Q. M. U. S. A., 8th corps.  
 Lieutenant Colonel L. H. Peirce, A. Q. M. U. S. A., 9th corps.  
 Lieutenant Colonel C. E. Walbridge, A. Q. M. U. S. vols., 10th corps.  
 Lieutenant Colonel A. N. Shipley, A. Q. M. U. S. A., 13th corps.  
 Lieutenant Colonel J. E. Remington, A. Q. M. U. S. vols., 14th corps.  
 Lieutenant Colonel G. L. Fort, A. Q. M. U. S. vols., 15th corps.  
 Brevet Lieutenant Colonel C. K. Drew, A. Q. M. U. S. vols., (acting,) 16th corps.  
 Lieutenant Colonel E. M. Joel, A. Q. M. U. S. vols., 17th corps.  
 Brevet Brigadier General M. J. Ludington, A. Q. M. U. S. vols., 22d corps.  
 Brevet Brigadier General J. F. Boyd, A. Q. M. U. S. vols., (acting,) 23d corps.  
 Lieutenant Colonel A. B. Lawrence, A. Q. M. U. S. vols., 24th corps.  
 Lieutenant Colonel H. B. Blood, A. Q. M. U. S. vols., 25th corps.  
 Brevet Major G. W. Davis, A. Q. M. U. S. vols., (acting,) 25th corps.

NOTE.

3d corps broken up and consolidated with 2d and 5th army corps March 23, 1864.  
 5th corps discontinued June 28, 1865.  
 6th corps discontinued June 28, 1865.  
 11th and 12th corps consolidated into the 20th army corps April 4, 1864.  
 19th corps discontinued December 13, 1864.

19th corps discontinued March 20, 1865.

20th corps discontinued June 1, 1865.

21st corps consolidated with 4th army corps September 28, 1863.

Respectfully submitted :

JOHN V. FUREY,  
*Brevet Major, Assistant Quartermaster.*

*List of officers who have served as chief quartermasters of divisions of the army during the fiscal year ending June 30, 1866.*

Major M. A. Alberger, A. Q. M. U. S. vols., 2d division 24th corps  
Major Henry Bowman, A. Q. M. U. S. vols., 1st division 9th corps.  
Brevet Lieutenant Colonel W. H. D. Cochrane, A. Q. M. U. S. vols., 1st division 9th corps.  
Captain T. H. Capron, A. Q. M. U. S. vols., 2d division 15th corps.  
Major James Gleason, A. Q. M. U. S. vols., 2d division 2d corps.  
Major H. F. Gerrish, A. Q. M. U. S. vols., 3d division 24th corps.  
Major Peter Heistand, A. Q. M. U. S. vols., 2d division 9th corps.  
Major G. W. Johnes, A. Q. M. U. S. vols., 3d division 2d corps.  
Major H. W. Johnson, A. Q. M. U. S. vols., 3d division 4th corps.  
Brevet Lieutenant Colonel Nelson Plato, A. Q. M. U. S. vols., 1st division 18th corps.  
Major C. M. Sampson, A. Q. M. U. S. vols., 1st division 24th corps.  
Major Thos. F. Purnell, A. Q. M. U. S. vols., 1st division U. S. colored troops.  
Brevet Lieutenant Colonel G. E. Dunbar, A. Q. M. U. S. vols., 3d division cavalry corps.  
Major J. H. Tallman, A. Q. M. U. S. vols., 2d division cavalry corps.  
Brevet Lieutenant Colonel C. W. Thomas, A. Q. M. U. S. A., division under command of General J. G. Foster.

Respectfully submitted :

JOHN V. FUREY,  
*Brevet Major, Assistant Quartermaster.*

*List of officers of the Quartermaster's Department upon whom brevet rank has been conferred, (with latest brevet and date thereof,) during the war.*

Name of officer.	Brevet rank.	Date of brevet.
<b>REGULARS.</b>		
M. C. Meigs.....	Brevet major general.....	July 5, 1864.
Charles Thomas .....	Brevet major general.....	March 13, 1865.
Thomas Swords.....	Brevet brigadier general.....	April 25, 1865.
George H. Crosman .....	Brevet brigadier general.....	March 13, 1865.
David H. Vinton.....	Brevet brigadier general.....	March 13, 1865.
Edwin B. Babbitt.....	Brevet colonel.....	March 13, 1865.
Robert E. Clary.....	Brevet brigadier general.....	March 13, 1865.
Morris S. Miller.....	Brevet brigadier general.....	March 13, 1865.
Robert Allen .....	Brevet major general.....	March 13, 1865.
James L. Donaldson.....	Brevet major general.....	June 20, 1865.
Langdon C. Easton .....	Brevet brigadier general.....	September 17, 1864.
Stewart Van Vliet.....	Brevet brigadier general.....	October 8, 1864.
	Brevet major general of vols.....	March 13, 1865.
Daniel H. Rucker.....	Brevet major general.....	March 13, 1865.
Rufus Ingalls .....	Brevet major general.....	March 11, 1865.
Ralph W. Kirkham .....	Brevet colonel .....	March 13, 1865.
John C. McFerran.....	Brevet brigadier general.....	March 13, 1865.
Frederick Myers.....	Brevet brigadier general.....	March 13, 1865.
Tredwell Moore.....	Brevet lieutenant colonel .....	March 13, 1865.
Hyatt C. Ransom.....	Brevet lieutenant colonel .....	March 13, 1865.
Asher R. Eddy .....	Brevet colonel.....	March 13, 1865.
Rufus Saxton.....	Brevet brigadier general.....	April 9, 1865.
	Brevet major general of vols.....	January 12, 1865.



*List of officers of the Quartermaster's Department, &c.—Continued.*

Name of officer.	Brevet rank.	Date of brevet.
Samuel B. Holabird.....	Brevet brigadier general.....	March 13, 1865.
Judson D. Bingham.....	Brevet brigadier general.....	April 9, 1865.
Alexander J. Perry.....	Brevet brigadier general.....	March 13, 1865.
John G. Chandler.....	Brevet colonel.....	March 13, 1865.
Robert O. Tyler.....	Brevet major general.....	March 13, 1865.
William Myers.....	Brevet brigadier general.....	March 13, 1865.
Charles G. Sawtelle.....	Brevet colonel.....	March 13, 1865.
Charles W. Thomas.....	Brevet lieutenant colonel.....	March 13, 1865.
Alvan C. Gillem.....	Brevet brigadier general.....	March 13, 1865.
Henry C. Hodges.....	Brevet lieutenant colonel.....	March 13, 1865.
James J. Dana.....	Brevet brigadier general.....	March 13, 1865.
Warren L. Lothrop.....	Brevet lieutenant colonel.....	March 13, 1865.
Herman Biggs.....	Brevet brigadier general.....	March 13, 1865.
Herbert M. Enos.....	Brevet colonel.....	March 13, 1865.
Elisha E. Camp.....	Brevet lieutenant colonel.....	March 13, 1865.
Benjamin C. Card.....	Brevet brigadier general.....	March 13, 1865.
Joseph A. Potter.....	Brevet brigadier general.....	March 13, 1865.
Charles H. Tompkins.....	Brevet brigadier general.....	March 13, 1865.
Charles A. Reynolds.....	Brevet lieutenant colonel.....	March 13, 1865.
George B. Dandy.....	Brevet brigadier general.....	March 13, 1865.
Elias B. Carling.....	Brevet lieutenant colonel.....	March 13, 1865.
Francis J. Crilly.....	Brevet lieutenant colonel.....	March 13, 1865.
Augustus G. Robinson.....	Brevet major.....	March 13, 1865.
James A. Ekin.....	Brevet brigadier general.....	March 13, 1865.
Alexander Bliss.....	Brevet colonel.....	March 13, 1865.
Austin C. Woolfolk.....	Brevet major.....	March 13, 1865.
Henry W. Janes.....	Brevet major.....	March 13, 1865.
Luther H. Peirce.....	Brevet lieutenant colonel.....	March 13, 1865.
William W. McKim.....	Brevet colonel.....	March 13, 1865.
James G. C. Lee.....	Brevet lieutenant colonel.....	July 31, 1865.
James M. Moore.....	Brevet lieutenant colonel.....	March 13, 1865.
Richard N. Batchelder.....	Brevet colonel.....	March 13, 1865.
	Brevet brigadier general of vols.....	March 13, 1865.
Edward B. Grimes.....	Brevet major.....	May 26, 1865.
Charles W. Foster.....	Brevet colonel.....	November 4, 1865.
Augustus Boyd.....	Brevet major.....	October 10, 1864.
Ebenezer S. Sibley.....	Brevet colonel.....	June 12, 1861.
Gardner S. Blodgett.....	Brevet major.....	March 13, 1865.
J. H. Dickerson.....	Brevet major.....	March 13, 1865.
Alexander N. Shipley.....	Brevet lieutenant colonel.....	March 13, 1865.
Charles W. Moulton.....	Brevet colonel.....	March 13, 1865.
W. T. Howell.....	Brevet lieutenant colonel of vols.....	March 13, 1865.
George W. Bradley.....	Brevet colonel of vols.....	March 13, 1865.
J. H. Belcher.....	Brevet major of vols.....	March 13, 1865.
S. T. Barstow.....	Brevet brigadier general of vols.....	March 13, 1865.
<b>VOLUNTEERS.</b>		
Allen, E. S.....	Brevet lieutenant colonel.....	March 13, 1865.
Alberger, M. H.....	Brevet major.....	March 13, 1865.
Austin, Adoniram.....	Brevet major.....	March 13, 1865.
Brown, S. L.....	Brevet brigadier general.....	March 13, 1865.
Burr, Raymond.....	Brevet colonel.....	March 13, 1865.
Boyd, J. F.....	Brevet brigadier general.....	March 13, 1865.
Brown, S. B.....	Brevet major.....	March 13, 1865.
Brown, J. M.....	Brevet major.....	March 13, 1865.
Brownson, Harry.....	Brevet major.....	March 31, 1865.
Brinkerhoff, R.....	Brevet brigadier general.....	September 20, 1866.
Blood, H. B.....	Brevet lieutenant colonel.....	March 13, 1865.
Bowles, T. C.....	Brevet major.....	March 13, 1865.
Bagg, Sylvester.....	Brevet major.....	November 22, 1865.
Bean, E. B.....	Brevet major.....	October 31, 1865.
Burton, Benjamin.....	Brevet major.....	March 13, 1865.
Bowman, Henry.....	Brevet major.....	March 13, 1865.
Blunt, A. P.....	Brevet brigadier general.....	March 13, 1865.

*List of officers of the Quartermaster's Department, &c.—Continued.*

Name of officer.	Brevet rank.	Date of brevet.
Bullock, D. D.	Brevet major	March 13, 1865.
Bliven, C. E.	Brevet major	March 5, 1866.
Bean, S. B.	Brevet major	March 13, 1865.
Bailhache, W. H.	Brevet major	March 13, 1865.
Burchard, S. D.	Brevet major	October 15, 1865.
Bulkley, C. S.	Brevet colonel	March 13, 1865.
Barnes, Stuart	Brevet lieutenant colonel	March 13, 1865.
Boyd, E. B.	Brevet major	March 13, 1865.
Conklin, J. T.	Brevet brigadier general	March 13, 1865.
Cruttenden, J. D.	Brevet colonel	March 13, 1865.
Cochrane, W. H. D.	Brevet lieutenant colonel	March 13, 1865.
Chapman, E. D.	Brevet major	March 13, 1865.
Clark, George F.	Brevet major	February 8, 1865.
Cox, Thomas J.	Brevet colonel	March 13, 1865.
Craig, John R.	Brevet major	March 13, 1865.
Carlile, T. J.	Brevet major	March 13, 1865.
Clemments, J. C.	Brevet major	November 9, 1865.
Cumming, A. M.	Brevet major	March 13, 1865.
Conn, Alexander	Brevet major	March 13, 1865.
Camp, E. M.	Brevet major	March 13, 1865.
Campbell, James	Brevet major	March 13, 1865.
Cadwallader, G. B.	Brevet colonel	November 1, 1865.
Cushing, G. W.	Brevet major	March 13, 1865.
Clowry, R. C.	Brevet lieutenant colonel	March 13, 1865.
Carver, H. L.	Brevet lieutenant colonel	December 14, 1865.
Colburn, W. J.	Brevet major	March 13, 1865.
Carter, B. C.	Brevet major	March 13, 1865.
Crowell, J. H.	Brevet major	March 1, 1866.
Cilley, J. K.	Brevet major	March 13, 1865.
Churchill, J. O.	Brevet lieutenant colonel	March 13, 1865.
Campbell, J. B.	Brevet major	March 13, 1865.
Case, Rufus K.	Brevet major	February 1, 1866.
Chittenden, C. B.	Brevet lieutenant colonel	March 13, 1865.
Comstock, A. H.	Brevet lieutenant colonel	May 31, 1866.
Crain, Frederick	Brevet lieutenant colonel	December 2, 1865.
Crandon, T. F. P.	Brevet major	December 30, 1865.
Dodge, George S.	Brevet brigadier general	January 15, 1865.
Deane, C. H.	Brevet lieutenant colonel	March 13, 1865.
Daniels, W. H.	Brevet major	March 13, 1865.
Del Vecchio, J. R.	Brevet lieutenant colonel	May 31, 1866.
Darrow, Charles	Brevet major	March 13, 1865.
Dunton, A. T.	Brevet lieutenant colonel	March 13, 1865.
Drew, C. K.	Brevet lieutenant colonel	March 13, 1865.
Dunbar, G. E.	Brevet lieutenant colonel	March 13, 1865.
Day, D. W. H.	Brevet lieutenant colonel	March 13, 1865.
Davis, G. W.	Brevet major	March 13, 1865.
Eckert, T. T.	Brevet brigadier general	March 13, 1865.
Elwell, J. J.	Brevet colonel	March 13, 1865.
Edwards, Arthur	Brevet colonel	February 22, 1865.
Emery, C. F.	Brevet major	September 20, 1865.
Fort, G. L.	Brevet lieutenant colonel	March 13, 1865.
Fitch, T. D.	Brevet lieutenant colonel	November 27, 1865.
Flagg, Geo. A.	Brevet major	July 29, 1865.
Flagg, Newton	Brevet major	March 13, 1865.
Farnsworth, J. G.	Brevet colonel	March 13, 1865.
Flaigan, P.	Brevet major	March 13, 1865.
Furey, John V.	Brevet major	March 13, 1865.
Flagg, A. S.	Brevet major	March 13, 1865.
Farr, E. P.	Brevet major	March 13, 1865.
Folsom, C. W.	Brevet major	March 13, 1865.
Finney, C. G.	Brevet major	March 13, 1865.
Garber, M. C.	Brevet colonel	March 13, 1865.
Gardner, R. S.	Brevet major	March 13, 1865.
Goldie, William	Brevet lieutenant colonel	March 13, 1865.

*List of officers of the Quartermaster's Department, &c.—Continued.*

Name of officer.	Brevet rank.	Date of brevet.
Green, J. A.	Brevet major	October 30, 1865.
Gleason, James	Brevet major	March 13, 1865.
Gross, W. L.	Brevet lieutenant colonel	March 13, 1865.
Graves, E. P.	Brevet major	March 13, 1865.
Gear, A. S.	Brevet major	April 27, 1866.
Gilmore, J. R.	Brevet lieutenant colonel	March 13, 1865.
Gerrish, H. F.	Brevet major	March 13, 1865.
Goslin, Alexander	Brevet major	March 12, 1865.
Hayes, Hiram	Brevet lieutenant colonel	March 13, 1865.
Hoyt, C. H.	Brevet brigadier general	March 13, 1865.
Howard, J. B.	Brevet colonel	April 9, 1865.
Hopkins, W. R.	Brevet major	November 25, 1865.
Heistand, Peter	Brevet major	March 13, 1865.
Harrison, G. W.	Brevet lieutenant colonel	December 15, 1865.
Haskell, J. G.	Brevet major	March 13, 1865.
Howland, Henry	Brevet major	March 13, 1865.
Hibbard, G. B.	Brevet major	March 13, 1865.
Hamill, S. R.	Brevet major	May 21, 1865.
Hunt, Thomas B.	Brevet major	March 13, 1865.
Hazelton, J. F.	Brevet major	March 13, 1865.
How, W. Storer	Brevet major	March 13, 1865.
Hoyt, James T.	Brevet major	March 13, 1865.
Heaton, G. L.	Brevet major	January 27, 1866.
Hynes, John R.	Brevet major	March 13, 1865.
Hall, T. E.	Brevet major	March 13, 1865.
Irvin, C. H.	Brevet colonel	May 8, 1865.
Joel, E. M.	Brevet lieutenant colonel	March 13, 1865.
Johnston, T. P.	Brevet major	March 13, 1865.
James, W. L.	Brevet brigadier general	March 1, 1865.
Jennings, John R.	Brevet major	February 1, 1866.
Jones, J. E.	Brevet colonel	May 19, 1866.
James, John H.	Brevet lieutenant colonel	December 2, 1865.
Johnson, H. W.	Brevet major	March 13, 1865.
Kimball, A. S.	Brevet major	February 1, 1866.
Kimball, W. M.	Brevet lieutenant colonel	January 18, 1866.
King, H. C.	Brevet colonel	May 19, 1865.
Kerr, Thomas J.	Brevet lieutenant colonel	March 13, 1865.
Kirk, E. B.	Brevet major	March 13, 1865.
Ludington, M. I.	Brevet brigadier general	March 13, 1865.
Le Duc, W. G.	Brevet brigadier general	March 13, 1865.
Lawrence, A. B.	Brevet lieutenant colonel	March 13, 1865.
Lee, George W.	Brevet colonel	March 13, 1865.
Lacey, H. B.	Brevet major	March 13, 1865.
Low, James P.	Brevet lieutenant colonel	March 13, 1865.
Lambert, W. H.	Brevet major	March 13, 1865.
Lynch, S. G.	Brevet lieutenant colonel	March 13, 1865.
Lawrence, H. C.	Brevet major	March 13, 1865.
Lyon, Farnham	Brevet major	March 13, 1865.
Lapham, W. B.	Brevet major	October 30, 1865.
Mackay, A. J.	Brevet brigadier general	March 13, 1865.
Moore, L. L.	Brevet major	March 13, 1865.
Morris, W. G.	Brevet major	March 13, 1865.
Morgan, R. C.	Brevet major	March 13, 1865.
Metcalf, L. S.	Brevet colonel	March 13, 1865.
Mandeville, M. H.	Brevet major	March 13, 1865.
McKim, J. W.	Brevet major	March 13, 1865.
Manning, S. H.	Brevet lieutenant colonel	March 13, 1865.
Mann, J. C.	Brevet major	March 13, 1865.
Marshall, G. W.	Brevet major	March 13, 1865.
McClure, J. W.	Brevet major	March 13, 1865.
Newport, R. M.	Brevet colonel	March 13, 1865.
Noble, Henry T.	Brevet colonel	March 13, 1865.
Noble, L. C.	Brevet lieutenant colonel	March 13, 1865.
Nash, C. W.	Brevet major	March 13, 1865.

*List of officers of the Quartermaster's Department, &c.—Continued.*

Name of officer.	Brevet rank.	Date of brevet.
Orme, George R. ....	Brevet major .....	March 13, 1865.
Page, Henry .....	Brevet colonel .....	March 13, 1865.
Plato, Nelson .....	Brevet lieutenant colonel .....	March 13, 1865.
Parker, G. L. ....	Brevet lieutenant colonel. ....	March 13, 1865.
Potter, O. O. ....	Brevet lieutenant colonel. ....	December 2, 1865.
Powers, Jos. T. ....	Brevet major .....	June 8, 1865.
Parks, John .....	Brevet colonel .....	October 23, 1865.
Pierce, G. A. ....	Brevet colonel .....	July 25, 1865.
Poor, L. A. ....	Brevet major .....	March 13, 1865.
Robinson, H. L. ....	Brevet brigadier general .....	March 13, 1865.
Rutherford, G. V. ....	Brevet brigadier general .....	March 13, 1865.
Rusling, J. F. ....	Brevet brigadier general. ....	March 13, 1865.
Reichenbach, E. C. ....	Brevet major .....	March 13, 1865.
Remington, J. E. ....	Brevet lieutenant colonel .....	March 13, 1865.
Royce, H. A. ....	Brevet major .....	March 13, 1865.
Russ, C. E. ....	Brevet major .....	March 13, 1865.
Stinson, Daniel .....	Brevet colonel .....	March 13, 1865.
Stager, Anson .....	Brevet brigadier general .....	March 13, 1865.
Shallenberger, G. A. ....	Brevet lieutenant colonel .....	March 13, 1865.
Swope, R. C. ....	Brevet major .....	March 13, 1865.
Swaine, J. A. ....	Brevet lieutenant colonel .....	March 13, 1865.
Smith, C. K., jr. ....	Brevet major .....	March 13, 1865.
Shephard, L. W. ....	Brevet lieutenant colonel .....	March 13, 1865.
Stubbs, J. D. ....	Brevet lieutenant colonel .....	March 13, 1865.
Stewart, John .....	Brevet major .....	March 31, 1865.
Seely, F. A. ....	Brevet major .....	March 13, 1865.
Staples, R. G. ....	Brevet major .....	March 13, 1865.
Strang, E. J. ....	Brevet lieutenant colonel .....	May 11, 1865.
Skinner, Holly .....	Brevet lieutenant colonel .....	March 13, 1865.
Summers, Moses .....	Brevet major .....	March 13, 1865.
Seelye, Edgar .....	Brevet major .....	January 5, 1866.
Smith, E. J. ....	Brevet major .....	March 13, 1865.
Smith, H. M. ....	Brevet major .....	March 13, 1865.
Tyler, C. R. ....	Brevet major .....	March 13, 1865.
Tucker, A. M. ....	Brevet lieutenant colonel .....	March 13, 1865.
Tolles, C. W. ....	Brevet colonel .....	November 1, 1864.
Trumbull, J. L. ....	Brevet lieutenant colonel .....	April 10, 1865.
Treadway, J. D. ....	Brevet major .....	March 13, 1865.
Van Vliet, L. S. ....	Brevet major .....	March 13, 1865.
Van Duzer, J. C. ....	Brevet lieutenant colonel .....	March 13, 1865.
Van Patten, J. S. ....	Brevet major .....	December 30, 1865.
Wise, George D. ....	Brevet brigadier general .....	March 13, 1865.
Webster, R. C. ....	Brevet colonel .....	March 13, 1865.
Wagner, C. B. ....	Brevet colonel .....	March 13, 1865.
Wing, C. T. ....	Brevet colonel .....	March 13, 1865.
Webster, G. P. ....	Brevet colonel .....	February 17, 1866.
White, George Q. ....	Brevet major .....	April 26, 1866.
Webster, Amos .....	Brevet major .....	April 9, 1865.
Wilson, James .....	Brevet lieutenant colonel .....	December 6, 1865.
Wilson, Thomas P. ....	Brevet major .....	March 13, 1865.
Winslow, G. C. ....	Brevet lieutenant colonel .....	December 9, 1865.
Whitman, E. B. ....	Brevet major .....	March 13, 1865.
Woods, John L. ....	Brevet major .....	March 13, 1865.
Wells, George W. ....	Brevet major .....	March 13, 1865.
Wainwright, W. A. ....	Brevet major .....	March 13, 1865.
Whetsel, H. B. ....	Brevet major .....	March 13, 1865.
Whittemore, C. B. ....	Brevet major .....	March 13, 1865.
Watson, C. T. ....	Brevet major .....	June 4, 1866.
Whytal, T. G. ....	Brevet lieutenant colonel .....	March 13, 1865.
Wickersham, M. D. ....	Brevet lieutenant colonel .....	March 13, 1865.
Wills, A. W. ....	Brevet major .....	June 23, 1865.
Wray, James T. ....	Brevet major .....	September 20, 1865.
Whittlesey, H. M. ....	Brevet brigadier general .....	March 13, 1865.
Westbrook, R. L. ....	Brevet lieutenant colonel .....	March 13, 1865.
Walbridge, C. E. ....	Brevet major .....	January 1, 1865.

RECAPITULATION.

REGULAR OFFICERS.

Brevet major generals United States army.....	7
Brevet major generals of volunteers.....	2
Brevet brigadier generals United States army.....	20
Brevet brigadier generals of volunteers.....	2
Brevet colonels United States army.....	11
Brevet colonels of volunteers.....	1
Brevet lieutenant colonels United States army.....	13
Brevet lieutenant colonels of volunteers.....	1
Brevet majors United States army.....	7
Brevet majors of volunteers.....	1
Total .....	<u>65</u>

VOLUNTEER OFFICERS.

Brevet brigadier generals .....	18
Brevet colonels .....	26
Brevet lieutenant colonels.....	50
Brevet majors.....	116
Total .....	<u>210</u>

Respectfully submitted :

JOHN V. FUREY,  
*Brevet Major, Assistant Quartermaster.*

# REPORT

## OF

### THE COMMISSARY GENERAL OF SUBSISTENCE.

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OFFICE COMMISSARY GENERAL OF SUBSISTENCE,  
*Washington City, D. C., October 20, 1866.*

SIR : In compliance with your instructions of the 5th instant, addressed to chiefs of bureaus of the War Department, I have the honor to submit the following report of the operations of the subsistence department for the past year :

At the date of my last report, those officers of this department who had charge of the subsistence stores on hand at the principal depots on the termination of the war, were engaged in making thorough and detailed inspections of such of them as still remained on hand. Such quantity of those stores found to be in perfect condition as could be used in subsisting the reduced army, were retained for that purpose, and have been distributed for issue. Most of the remainder have been sold at auction, on due public notice, and have generally brought satisfactory prices. A few of the articles, having but little liability to become injured, were withheld from sale, and are still supplied to the troops. Although the larger part of the subsistence stores supplied to the army during the past year were obtained at Boston, New York, Philadelphia, Baltimore, Cincinnati, Louisville, Saint Louis, San Francisco, and other principal market centres of the northern States, still the general return to the productive pursuits of peace of the greater number of citizens north and south who took part in the war, and the consequent reopening of the customary channels and sources of trade and supply, have enabled this department to return to a partial extent to its former course of obtaining its supplies from dealers and producers at or near the points where they are to be consumed. The market of New Orleans is now so well filled with supplies, and has so far resumed a healthful mercantile condition, as to enable the chief commissary of the department of the Gulf to obtain most of his subsistence stores in that market and at satisfactory prices.

For several years after California became a State of the Union, nearly all the supplies required for the troops stationed on the Pacific coast were purchased at New York, and shipped thence to San Francisco, and there placed in depot for distribution. San Francisco has gradually become a well-supplied and reliable market, where the chief commissary of the division of the Pacific is now generally able to obtain most of his supplies at satisfactory prices, and of good quality. Many of them are the product of California and Oregon, or of other countries bordering upon the Pacific ocean with which San Francisco is in commercial connection.

During the past year written contracts for fresh beef have been made in the southern States as follows : In Virginia, sixteen contracts, at the average price of 12.16 cents per pound ; in North Carolina, twelve contracts, at 16.71 cents ; in South Carolina, four contracts, at 13.87 cents ; in Georgia, four contracts, at 13.87 cents ; in Florida, two contracts, at 12½ cents ; in Alabama, six contracts, at 12.86 cents ; in Louisiana, seven contracts, at 9.29 cents ; in Mississippi, eight contracts, at 9.07 cents ; in Texas, sixteen contracts, at 6.79 cents ; in Arkansas, ten contracts, at 8.49 cents, and in Tennessee, four contracts, at



11.34 cents, making in all eighty-nine fresh beef contracts, at a general average of 11.06 per pound. Other articles to a small extent have also been purchased in the interior of some of those States, but as a general course the subsistence department still carries supplies into them for issue to the troops, as well as for distribution to those persons who are provided for by the United States, through the co-operative agency of the Bureau of Refugees, &c.

As heretofore, and as is required by law and regulations, the subsistence stores purchased during the past year were mostly procured on contracts made by means of advertisements for sealed proposals and written proposals and acceptances. Formal written articles of agreement, with bonds, being entered into when time contracts were made. In cases where stores were required for immediate shipment from points of purchase, and the purchasing officers had not on hand the required stores, they have obtained them by open market purchases, giving notice of the want upon the bulletin boards of produce exchanges, or otherwise inviting the competition requisite for securing advantageous purchases.

There were filed in this office during the past year in the advertisement book six hundred and eighty-four separate advertisements; many of them for several articles. The number of contracts entered into by officers of this department, or those acting therein, during the year from September 1, 1865, to August 31, 1866, was as follows:

Contracts for supplying complete rations.....	190
Contracts for supplying fresh beef.....	263
Contracts for supplying beef cattle.....	39
Contracts for supplying miscellaneous items.....	62
Contracts consisting of advertisements for sealed proposals, written proposals, and acceptances.....	1,125
<b>Total number of contracts for the year.....</b>	<b>1,679</b>

The total amount of money drawn from the treasury and disbursed by the subsistence department during the past fiscal year was seven millions five hundred and eighteen thousand eight hundred seventy-two dollars fifty-four cents, including all payments made under section 3, of the act of July 4, 1864.

The amount disbursed during the fiscal years of the war was as follows:

From July 1, 1861, to June 30, 1862.....	\$48,799,521 14
From July 1, 1862, to June 30, 1863.....	69,537,582 78
From July 1, 1863, to June 30, 1864.....	98,666,918 50
From July 1, 1864, to June 30, 1865.....	144,782,969 41
From July 1, 1865, to June 30, 1866.....	7,518,872 54
<b>Total amount.....</b>	<b>369,305,864 37</b>

Under the joint resolution of July 25, 1866, this department is engaged in paying commutation of rations to those United States soldiers who were held as prisoners of war, upon certificates as to the period of their imprisonment furnished by the commissary general of prisoners.

The proper regulations having been adopted, and the necessary orders published for furnishing tobacco to the enlisted men of the army, under the requirements of section 6, of the act of March 1865, that article is now being supplied by this department.

The total value of all subsistence stores sold by this department to the Department of the Interior for issue to Indians, supplied to Indians held on reservations, or issued to Indians visiting military posts for the purpose of holding coun-

cils, or other purposes during the first half of the current year is \$487,914 49, a detailed statement of which I had the honor to transmit to you on the 3d instant.

The money value of the subsistence stores supplied by this department, under the requisitions and returns of the proper officers on duty in the Bureau of Refugees, &c., during the months of July and August, 1866, is \$237,219 09, proper accounts for which have been furnished to the Commissioner of that bureau, in order that this sum may be transferred to the subsistence department from the appropriation for the support of the Bureau of Refugees, &c., for the current fiscal year.

During the war it was necessary to subsist a large number of civilians employed with the several armies in the field by rations issued from the army supplies. Measures have been taken to reduce such issues to the lowest practicable point.

A very considerable improvement has been made this year in putting up subsistence stores for the more distant posts in the western States and Territories, as well as in their transportation across the plains; the result being that they are reported as reaching their ultimate points of delivery in better condition than has heretofore been the case.

The total number of commissaries of subsistence of volunteers who held appointments and performed duty in this department during some portion of the period of the war was 777. The number in service at the date of my last report was 257. The number still in service is fifteen.

The number of officers of all branches of the service who performed duty in the subsistence department and rendered accounts in the last fiscal year is 3,058; the number of separate accounts rendered by them having been 22,617. Of the above officers, 2,720 of them have closed their accounts with this department; 2,210 of them having made final settlement at the treasury.

The number of clerks authorized to be employed in this bureau is sixty-three, there being now employed forty.

The number of claims received, decided, and pending in this office for subsistence alleged to have been furnished for the use of the army under the third section of the act approved July 4, 1864, was, on the date of my last report, as follows, viz :

Received .....	1, 470
Approved.....	50
Disallowed.....	413
Pending.....	1, 007

The total number of these claims now received is three thousand and eighty-two, amounting in the aggregate to seventeen hundred and fifty-eight thousand and thirty-one dollars and four cents; of which number, two hundred and thirty-four have been examined and reported to the Third Auditor of the Treasury, with recommendations for settlement; the aggregate amount of which, as allowed, is eighty-five thousand three hundred and forty-three dollars and ten cents, and the number examined and rejected, mainly for disloyalty, and upon the reports of officers alleged to have taken or received the stores, that they had not themselves received or taken, or ordered the taking, nor had any knowledge that the stores for which payment was claimed had been taken, is nine hundred and thirty-nine, amounting to six hundred and fifty-one thousand five hundred and sixty-four dollars and twenty-three cents; leaving nineteen hundred and nine of these claims, amounting to ten hundred and twenty-one thousand one hundred and twenty-three dollars and seventy-one cents, awaiting final examination and decision.

Names and rank.	Station.	Nature of duty.
<i>Commissary General of Subsistence.</i>		
BRIGADIER GENERAL.		
Bvt. Major General Amos B. Eaton.....	Washington, D. C.....	Commissary General of Subsistence.
<i>Assistant Commissary General of Subsistence.</i>		
COLONELS.		
Bvt. Major General Alexander E. Shiras.....	Washington, D. C.....	Assistant Commissary General of Subsistence.
Bvt. Brigadier General Charles L. Kilburn.....	Philadelphia, Pa.....	Chief commissary of the military department of the east, and purchasing and depot commissary of subsistence, at Philadelphia, Pennsylvania.
LIEUTENANT COLONELS.		
Bvt. Brigadier General Marcus D. L. Simpson..	.....	On a tour of subsistence inspection in the military division of the Pacific.
Bvt. Brigadier General Henry F. Clarke.....	New York, N. Y.....	Purchasing and depot commissary of subsistence at New York, N. Y., and in general charge of the subsistence department in the States of New York and Connecticut, and in New Jersey as far south as Princeton.
<i>Commissaries of Subsistence.</i>		
MAJORS.		
Bvt. Brigadier General William W. Burns.....	Charleston, S. C.....	Chief commissary of the military department of the south, and in general charge of the subsistence department in those parts of Georgia and Florida supplied from the Atlantic coast. Purchasing and depot commissary of subsistence at Charleston, South Carolina.
Bvt. Brigadier General Amos Beckwith .....	New Orleans, La.....	Chief commissary of the military department of the Gulf, and in general charge of the subsistence department in those parts of Mississippi and Alabama supplied from the depot at New Orleans or from the Gulf coast. Purchasing and depot commissary of subsistence at New Orleans.
Bvt. Colonel John McL. Taylor.....	San Francisco, Cal.....	Chief commissary of the military division of the Pacific. Purchasing and depot commissary of subsistence at San Francisco, California.
Bvt. Colonel Beekman DuBarry.....	Washington, D. C.....	On duty in subsistence bureau.
Bvt. Colonel Robert Macfeely.....	Detroit, Mich.....	Chief commissary of the military department of the lakes. Purchasing and depot commissary of subsistence at Detroit, Michigan.
Bvt. Brigadier General Thomas J. Haines.....	Saint Louis, Mo .....	Chief commissary of the military division of the Missouri.
Bvt. Colonel George Bell .....	Washington, D. C.....	Chief commissary of the military department of Washington. Purchasing and depot commissary of subsistence at Washington, D. C., and Alexandria, Virginia.

The officers of the subsistence department, &c.—Continued.

Names and rank.	Stations.	Nature of duty.
Bvt. Colonel Michael R. Morgan .....	Fort Leavenworth, Kan ...	Chief commissary of the military department of the Missouri. Purchasing and depot commissary of subsistence at Fort Leavenworth, Kansas.
CAPTAINS.		
Bvt. Major General John P. Hawkins .....	Washington, D. C. ....	On duty in subsistence bureau.
Bvt. Major General John W. Turner .....	Saint Louis, Mo. ....	Purchasing and depot commissary of subsistence.
Bvt. Colonel Michael P. Small .....	Nashville, Tenn .....	Purchasing and depot commissary of subsistence at Nashville, Tennessee. In general charge of the subsistence department in the States of Kentucky, Tennessee, and in those parts of Georgia and Alabama supplied from the depots of Kentucky and Tennessee.
Bvt. Major Thomas C. Sullivan .....	Richmond, Va. ....	Chief commissary of the military department of the Potomac.
Bvt. Major John W. Barriger .....	Louisville, Ky. ....	Purchasing and depot commissary of subsistence at Louisville, Kentucky.
Bvt. Lieutenant Colonel Thomas Wilson .....	Baltimore, Md. ....	Purchasing and depot commissary of subsistence at Baltimore, Maryland.
Bvt. Major William H. Bell .....	Santa Fé, N. M. ....	Under orders to report in person to the headquarters military division of the Missouri for assignment.
Bvt. Major Jeremiah H. Gilman .....	Fort Snelling, Minn. ....	Temporary duty at headquarters military department of Dakota.
Bvt. Major Samuel T. Cushing .....	Omaha, N. T. ....	Chief commissary of the military department of the Platte.
Bvt. Major Samuel A. Foster .....	Fort Vancouver, W. T. ....	Chief commissary of the military department of the Columbia, and purchasing and depot commissary of subsistence at Fort Vancouver, Washington Ter.
Bvt. Lieutenant Colonel Elijah D. Brigham .....	Boston, Mass. ....	Purchasing and depot commissary of subsistence at Boston, Massachusetts, and in general charge of the subsistence department in the New England States, except Connecticut.
Bvt. Major William A. Elderkin .....	Mobile, Ala. ....	Purchasing and depot commissary of subsistence at Mobile, Alabama, and in general charge of the subsistence department in that part of Alabama supplied from the Gulf coast.
Bvt. Major Joseph G. Crane .....	Little Rock, Ark. ....	Chief commissary of the military department of the Arkansas. Purchasing and depot commissary of subsistence at Little Rock, Arkansas.
Bvt. Major Charles B. Penrose .....	Washington, D. C. ....	On duty in subsistence bureau.
Bvt. Major William H. Nash .....	Brownsville Texas .....	Depot commissary at Brownsville and Brazos Santiago, Texas.
Charles McClure .....	Fort Union, N. M. ....	Depot commissary at Fort Union, New Mexico, under orders to relieverevet Major W. H. Bell in his duties at Santa Fé, New Mexico.

I have the honor to be, very respectfully, your obedient servant,  
Hon. EDWIN M. STANTON, Secretary of War.

A. B. EATON,  
Commissary General of Subsistence.

# REPORT

## OF

# THE SURGEON GENERAL.

WAR DEPARTMENT, SURGEON GENERAL'S OFFICE,  
Washington, D. C., October 20, 1866.

SIR: I have the honor to submit the following statement of finances and general transactions of the medical department of the army for the fiscal year ending July 1, 1866:

### FINANCIAL STATEMENT.

The funds at the disposal of the medical and hospital department during the year ending June 30, 1866, were as follows:

Balance of appropriations remaining in the treasury July 1, 1865	\$1,161,181 24
Amount of treasury draft No. 1,544, on war warrant 3,205, issued May 3, 1865, in favor of Assistant Surgeon J. B. Britton, lost in the mail, and subsequently refunded	10,000 00
Proceeds of sales of old or surplus medical and hospital property	4,044,261 59
Amount refunded on account of supplies furnished for the use of prisoners of war	22,163 34
Amount refunded by the subsistence department, being apportionment of amount paid for board and care of sick soldiers in private hospitals	121,600 51
Amount received for board of officers in hospitals	14,298 96
Amount recovered on account of stores and furniture lost or damaged in transportation	4,597 42
Refunded from appropriation for care of destitute discharged soldiers, being for board of discharged soldiers while having artificial limbs fitted	6,955 24
Received from all other sources	1,005 94
<b>Total</b>	<b>5,386,064 24</b>

Of this amount there was disbursed, during the same period—

For medical and hospital supplies, (a great part of this sum expended in payment of debt of previous year,)	\$975,773 83
For pay of private physicians	926,584 05
For pay of nurses and other hospital employes	309,916 06
For purchase of artificial limbs for disabled soldiers	198,999 00
For board of sick soldiers in private hospitals	58,781 75
For expenses of hospitals for officers	23,158 51
For expenses of purveying depots, laboratories, repairs, &c	312,243 18

For miscellaneous expenses of the medical department.....	\$32,345 39
Total disbursements during the fiscal year.....	2,837,801 77
Balance in the treasury June 30, 1866.....	2,546,457 14
Refunded of amount advanced by disbursing officers during the previous year.....	1,805 33
	<u>5,386,064 24</u>

The rapid reduction of the army, since the date of my last annual report, has enabled this department to reduce its expenditures, and to dispense with the system of general hospitals, hospital transports and railroad trains, ambulance corps, and a number of purveying depots. The comfort and proper medical treatment of the sick and wounded are now secured in well arranged post hospitals, of which there are at present one hundred and eighty-seven (187,) with a total capacity of ten thousand eight hundred and eighty-one (10,881) beds. All perishable articles of medicines and hospital supplies in excess of the requirements of a peace establishment have been disposed of by public sale at advantageous rates, and the reserved supplies concentrated at the purveying depots in New York, Philadelphia, Washington, St. Louis, New Orleans, and San Francisco.

In the absence of any appropriation for medicines and medical attendance for the Bureau of Freedmen, &c., during the fiscal year ending July 1, 1866, and under your instruction, every assistance was extended to it by this department. Surgeons and assistant surgeons were transferred to that bureau, acting assistant surgeons employed, and medicines and hospital supplies issued upon properly approved requisitions. Accounts for such issues and expenditures prior to July 1, 1866, amounting in the aggregate to two hundred and sixty-seven thousand three hundred and ninety-one dollars and ninety-two cents (\$267,391 92) were rendered to the Commissioner of the Bureau of Freedmen, &c., upon whose reference of them to the Comptroller of the Treasury the decision has been rendered, that they cannot be paid, or this department reimbursed, from the subsequent appropriations for the fiscal year ending July 1, 1867. Fortunately no embarrassment has arisen, and no legislative action is required, on account of these expenditures.

The appropriations for supplying artificial limbs to maimed soldiers so largely increased the number of inventors and manufacturers that it was found necessary for the protection of the government, as well as of the soldier, to convene from time to time medical boards composed of experienced officers, with instructions to examine all models submitted, subjecting them to the severest test of durability, usefulness and comfort, upon patients in hospitals. The models of twenty-three (23) manufacturers of artificial limbs and apparatus for resections, having been recommended by these various boards, were adopted, and medical directors authorized to give orders to those applicants who were entitled thereto upon either of these they might elect. In addition, medical directors were instructed to require satisfactory evidence of delivery of the limb or apparatus so ordered, and its suitableness and workmanship, before approving accounts for payment. Despite all precautions, however, it has been found impossible to secure in every instance useful and well-fitting limbs. In many cases the urgency of the applicant or the interest of the manufacturer have acted injuriously in adapting limbs before stumps had entirely healed, or the enlargement resulting from inflammation had subsided, and reopening of wounds, or shrinking of stumps, with consequent inability to wear the limb provided by government, have resulted. In other cases manufacturers, although



guaranteeing to supply upon government order, at a stated price, limbs fully equal to those submitted to the boards, have furnished an inferior article or have extorted from the soldier an extra payment for some fancied or nominal improvement. In all such cases coming to the knowledge of this department measures have been taken to protect the soldier and punish the criminal party, by requiring the defective limb to be replaced, or the overcharge reimbursed, under penalty of entire withdrawal of government orders.

From date of act of Congress, (July 16, 1862,) authorizing artificial limbs to be furnished, to July 1, 1866, there have been supplied by this department to maimed soldiers three thousand nine hundred and eighty-one (3,981) legs; two thousand two hundred and forty (2,240) arms; nine (9) feet; fifty-five (55) hands; one hundred and twenty-five (125) surgical apparatus, and it is estimated that not more than one thousand (1,000) limbs remain still to be supplied, at a cost probably of seventy thousand dollars (\$70,000.) Should the appropriations for this purpose be continued, it is recommended that upon furnishing the evidence now required to obtain an artificial limb, the applicant receive, from a medical disbursing officer, under such regulations as may be prescribed by the Secretary of War, its present established money value in lieu of an order upon a manufacturer. Such an arrangement would include those cases in which, from the nature of the injury and operation, no limb or (surgical) appliance can be advantageously adopted, by extending to them the same allowance now made to their more fortunate fellow-sufferers.

Early during the present year grave apprehensions of the appearance of Asiatic cholera as an epidemic were justified, and March 3, 1866, I had the honor to recommend, for the protection of our troops on the southern Atlantic seaboard, that a rigid quarantine be established, and sanitary precautions enforced, where necessary, by military authority.

The adoption of these measures has thus far been crowned by more than ordinary success, and although the disease has appeared at the recruiting depots and forts in New York harbor, at Tybee Island, Georgia, Galveston, Texas, Forts Jackson and St. Philip, Louisiana, Newport barracks, Kentucky, Jefferson barracks and St. Louis arsenal, Missouri, Carlisle barracks, Pennsylvania, and Vicksburg, Mississippi, it has been controlled, kept in check, or entirely eradicated before assuming its usual alarming epidemic form. I have already reported for your favorable consideration the names of certain medical officers to whose skilful administration, untiring zeal, and energy these results, by which the horrors of a widely spread pestilence have been averted, are attributable. With the above exceptions, the general health of the troops has been good.

The average mean strength of white troops for the year, as reported, was one hundred thousand one hundred and thirty-three, (100,133,) and the proportion of deaths, from all causes, to cases treated was one to every fifty-two.

The report of colored troops represents the average mean strength for the same period as fifty-three thousand five hundred and forty-one, (53,541,) among whom the proportion of cases taken sick was greater than with the white troops, and the mortality rate, one death to every twenty-nine cases treated.

There were remaining in general hospitals, June 30, 1865, and admitted during the year, sixty-four thousand four hundred and thirty-eight (64,438) patients, of whom, on the 30th June, 1866, only ninety-seven (97) remained under treatment.

The act of Congress approved July 28, 1866, provided for the addition of one chief and four assistant medical purveyors to the medical staff, who have been selected and appointed from those who had been charged with these duties during the war. A final examination of the accounts of ninety (90) officers serving as medical purveyors at various periods since 1861 reflects the highest

credit upon them, exhibiting as it does, care and judgment in purchases. industry and promptness in issues, exactitude and strict integrity in the rendition of accounts.

The annexed statement of issues from the purveying depots during the war is a vindication of the liberality of the government, as well as of the efficiency of the medical purveying department of the army.

In addition to the large quantities of ice, fruit, vegetables, &c., purchased from the hospital fund for the use of sick and wounded, there was furnished them during the war, from the appropriations of the medical department, forty-eight thousand six hundred and sixty-one (48,661) tons of ice.

Arrangements are nearly completed for the transfer to a fire-proof building on Tenth street of all the valuable mortuary records of this department, including sixteen thousand (16,000) folio volumes of hospital registers, forty-seven thousand (47,000) burial records, sixteen thousand (16,000) hospital muster and pay rolls, and alphabetical registers of the dead containing two hundred and fifty thousand (250,000) names of white, and twenty thousand (20,000) of colored soldiers, compiled from them; and the pathological collection constituting the Army Medical Museum.

During the year official evidence of cause of death, or of discharge for disability, has been furnished the Pension Bureau in twenty-six thousand five hundred and eighty-nine (26,589) cases; Paymaster General, eight thousand (8,000) cases; Adjutant General, ten thousand six hundred and twenty-three (10,623) cases; authorized agents, four thousand (4,000) cases, making a total of forty-nine thousand two hundred and twelve (49,212) cases.

This information, obtainable from no other source, has been of the greatest importance in the settlement of the claims of discharged soldiers and of widows and orphans, and in a majority of the cases is ample and satisfactory. In addition to the above, two hundred and ten thousand and twenty-seven (210,027) discharges upon certificate of disability have been examined and classified.

The total number of surgical cases classified and recorded is "of wounds," &c., one hundred and thirty-three thousand nine hundred and fifty-two (133,952,) and "of operations" twenty-eight thousand four hundred and thirty-eight (28,438.)

The preparation for publication of the Medical and Surgical History of the War has been prosecuted with energy, much of the manuscript and several of the illustrations for the first volume being completed. The Army Medical Museum continues to increase in value and usefulness, and the greater security and additional accommodations of the building to which it will be shortly removed admits of the addition of a great number of interesting and instructive specimens not hitherto available for want of space.

A small appropriation will be required to continue the work of classification and preservation of this national collection.

At post hospitals and with troops on the march or in the field, the nurses and hospital attendants are supplied by detail of enlisted men from the command, who under the special act of 1856, section 3, received the extra-duty pay allowed for "constant labor of not less than ten days' duration." The act of July 13, 1866, being construed as applicable only to labor on public works, roads, &c., excludes hospital attendants and nurses from its benefits, though their labors are more arduous, continuous and dangerous than those of other extra-duty men. A modification of the act, or an interpretation of it, that would include nurses and hospital attendants, is recommended as but just to this meritorious class, generally selected from the oldest and most trustworthy soldiers.

A medical board was convened in New York city on the 20th September, 1865, for the examination of candidates for positions in the medical staff United States army, and of assistant surgeons of that corps for promotion.

Ninety-eight (98) applicants were invited to present themselves, of which number nineteen (19) were fully examined, found qualified, and approved; seventeen (17) withdrew before their examinations were concluded; thirty-one (31) were rejected, and thirty-one (31) failed to appear.

Twenty-three (23) assistant surgeons United States army were examined for promotion, twenty (20) of whom were found qualified, two (2) reported for re-examination, and one (1) disqualified.

Their services being no longer required, one hundred and seventeen (117) surgeons and assistant surgeons of volunteers have been mustered out of service, since my last annual report; one (1) killed by Indians.

In the medical staff United States army there have been twelve (12) resignations six (6) deaths, two (2) by cholera, one (1) by accident, and three (3) from disease.

Fuller returns than those embraced in the report of 1865 give the number of casualties from commencement of the war to present time, in the regular and volunteer medical staff, as three hundred and thirty-six, (336,) viz:

Killed in battle, twenty-nine (29;) killed by accident, twelve (12;) died of wounds, ten (10;) died in rebel prison, four (4;) died of yellow fever, seven (7;) died of cholera, three (3;) died of other diseases, two hundred and seventy-one (271;) making a total of three hundred and thirty-six (336.)

During the war thirty-five (35) medical officers were wounded in battle.

The distribution of troops in small bodies over so large an extent of country, necessitates the employment of acting assistant surgeons temporarily, but the number of these has been reduced from one thousand nine hundred and ninety-seven, (1,997,) on July 1, 1865, to two hundred and sixty-four (264) on July 1, 1866, and will be still further diminished when existing vacancies in the grade of assistant surgeons, United States army, created by the act of Congress of July 28, 1866, are filled. A corresponding decrease in the number of hospital stewards, for general service, has also been effected, and in every branch of this department, reduction and retrenchment have been rigidly enforced.

The improvements in hospital construction and equipment, in surgical appliances, in means of transportation of sick and wounded, &c., resulting from the vast experience of the war, are considered worthy of exhibition as an evidence of national progress, and with this view models of United States general hospitals, with their equipment, of ambulances, litters, medicine wagons, &c., have been prepared, and will be forwarded through the proper channels as the contribution of the medical department United States army to the Paris Exposition.

It is a matter of just pride and congratulation to the medical profession throughout the civilized world that your deep interest in the health and hygienic condition of the army, your constant vigilance and most liberal assistance in all that could in any manner conduce to the greater comfort and welfare of the sick and wounded, and your official recognition of faithful and meritorious service by officers of this department, have been responded to on their part by redoubled exertions, unfailing devotion to duty, and an *esprit du corps* that secures to it professional talent of the highest order. Letters from the most eminent surgeons and physicians in Europe, in acknowledgment of publications from this office, do not express more astonishment at the magnitude of the war than admiration of the unvarying support and encouragement extended to the medical staff under your administration of the War Department

Most respectfully, your obedient servant,

JOS. K. BARNES,

*Surgeon General U. S. A., and Brevet Major General.*

Hon. E. M. STANTON,

*Secretary of War.*

## ABSTRACT "A."

*Statement of the quantity of medical supplies issued during the war from the purveying depots at New York city, Philadelphia, Penn., Baltimore, Md., Washington, D. C., Cincinnati, Ohio, Louisville, Ky., and St. Louis, Mo.*

## MEDICINES.

Acaciæ, pulvis.....	oz..	1, 050, 520
Acidum aceticum.....	oz..	373, 229
citricum.....	oz..	331, 801
muriaticum.....	oz..	372, 065
nitricum.....	oz..	323, 403
phosphoricum dilutum.....	oz..	37, 301
sulphuricum.....	oz..	657, 896
aromaticum.....	oz..	382, 574
tannicum.....	oz..	117, 575
tartaricum.....	oz..	401, 110
Æther fortior.....	oz..	927, 627
Ætheris spiritus compositus.....	oz..	367, 207
nitrici.....	oz..	1, 622, 943
Alcohol fortius, in 32 oz. bottles.....	bottles..	590, 604
Aloes pulvis.....	oz..	24, 767
Alumen.....	oz..	404, 907
Ammoniac carbonas.....	oz..	331, 446
liquor.....	oz..	1, 652, 356
murias.....	oz..	356, 796
spiritus aromaticus.....	oz..	175, 225
Antimonii et potassæ tartratis pulvis.....	oz..	17, 259
Argenti nitras.....	oz..	36, 524
fusus.....	oz..	36, 260
Arsenitis potassæ liquor.....	oz..	81, 008
Assafœtida.....	oz..	86, 160
Bismuthi subcarbonas.....	oz..	85, 790
Camphora.....	oz..	569, 425
Cantbaridis pulvis.....	oz..	52, 054
ceratum.....	oz..	427, 005
Capsici pulvis.....	oz..	209, 623
Catechu.....	oz..	113, 210
Cera alba.....	oz..	472, 343
Ceratum adipis.....	lbs..	251, 696
resinæ.....	lbs..	59, 151
Cinchonæ calisayæ pulvis.....	oz..	175, 235
Cinchonæ sulphas.....	oz..	374, 746
Chlorinium, (the materials for preparing,) in a package.....	no..	10, 705
Chloroformum.....	oz..	1, 522, 066
Collodium.....	oz..	22, 902
Copaiba.....	oz..	1, 202, 129
Creasotum.....	oz..	79, 033
Creta præparata.....	oz..	216, 009
Cubebæ oleo-resina, (ext. cubebæ, Fl. U. S. P. 1850).....	oz..	122, 729
pulvis.....	oz..	140, 000
Cupri sulphas.....	oz..	56, 027
Extractum aconiti radice fluidum.....	oz..	202, 242
belladonnæ.....	oz..	25, 145
buchu fluidum.....	oz..	315, 455
cinchonæ fluidum, (with aromatics).....	oz..	554, 110
colchici seminis fluidum.....	oz..	165, 260
colocynthidis compositum.....	oz..	162, 012
conii.....	oz..	12, 244
ergotæ fluidum.....	oz..	22, 471
gentianæ fluidum.....	oz..	229, 671
glycyrrhizæ.....	oz..	812, 425
hyoscyami.....	oz..	12, 734
ipæcacuanhæ fluidum.....	oz..	262, 926
nucis vomicæ.....	oz..	12, 425
pruni virginianæ fluidum.....	oz..	295, 925
rhei fluidum.....	oz..	245, 266
senegæ fluidum.....	oz..	334, 177
spigeliæ fluidum.....	oz..	21, 675

Extractum valerianæ fluidum .....	oz..	138, 456
veratri viridis fluidum .....	oz..	48, 759
zingiberis fluidum .....	oz..	607, 940
Ferri chloridi tinctura .....	oz..	690, 692
iodidi syrupus .....	oz..	138, 795
et quiniæ citras .....	oz..	69, 193
per sulphatis liquor .....	oz..	103, 582
pulvis .....	oz..	35, 226
sulphas .....	oz..	354, 273
oxidum hydratum, (the materials for, in a package) .....	no..	2, 421
Glycyrrhizæ pulvis .....	oz..	137, 796
Glycerina .....	oz..	385, 422
Hydrargyri chloridum corrosivum .....	oz..	10, 954
mite .....	oz..	127, 127
iodidum flavum .....	oz..	6, 710
oxidum rubrum .....	oz..	8, 992
pilulæ .....	oz..	313, 647
unguentum .....	lbs..	29, 508
nitratæ .....	oz..	129, 573
Hydrargyrum cum creta .....	oz..	62, 539
Iodinium .....	oz..	80, 168
Ipecacuanhæ pulvis .....	oz..	244, 137
et opii pulvis .....	oz..	492, 706
Linum .....	lbs..	94, 903
Lini pulvis .....	lbs..	521, 554
Magnesia .....	oz..	69, 867
Magnesiæ sulphas .....	lbs..	539, 712
Morphiæ sulphas .....	oz..	29, 828
Oleum cinnamomi .....	oz..	22, 157
Olei menthæ piperitæ tinctura .....	oz..	123, 757
Oleum morrhuæ, in 32 oz. bottles .....	bottles..	114, 596
olivæ, in 32 oz. bottles .....	bottles..	179, 105
ricini, in 32 oz. bottles .....	bottles..	220, 076
terebinthinæ, in 32 oz. bottles .....	bottles..	94, 824
tiglii .....	oz..	28, 486
Opium pulvis .....	oz..	448, 864
tinctura .....	oz..	901, 467
camphorata .....	oz..	998, 599
Pilulæ camphoræ, (gra. 2,) et opii, (gra. 1) .....	doz..	380, 058
catharticæ compositæ .....	doz..	655, 982
opii .....	doz..	442, 926
quiniæ sulphas .....	doz..	178, 050
Plumbi acetæ .....	oz..	418, 328
Podophylli resina .....	oz..	9, 410
Potassæ acetæ .....	oz..	113, 997
bicarbonas .....	oz..	326, 295
bitartras .....	oz..	568, 348
chloras .....	oz..	515, 844
nitræ .....	oz..	272, 841
permanganas cryst .....	lbs..	18, 041
Potassii iodidum .....	oz..	514, 064
Quiniæ sulphas .....	oz..	723, 521
Rheum .....	oz..	64, 094
Rhei pulvis .....	oz..	141, 875
Sapo .....	lbs..	269, 938
Scillæ pulvis .....	oz..	47, 182
syrupus .....	lbs..	219, 230
Sinapis nigræ pulvis .....	lbs..	219, 012
Sodæ chlorinatæ liquor .....	lbs..	163, 826
bicarbonas .....	oz..	797, 224
boras .....	oz..	132, 850
et potassæ tartras .....	oz..	646, 233
Spiritus lavandulæ compositus .....	oz..	349, 905
frumenti, (whiskey,) in 32 oz. bottles .....	bottles..	2, 430, 785
vini gallici, (brandy,) in 32 oz. bottles .....	bottles..	562, 221
Sulphur .....	oz..	309, 726
Strychnia .....	oz..	1, 232
Vinum album, (sherry,) in 32 oz. bottles .....	bottles..	913, 729
Zinci acetæ .....	oz..	20, 518
carbonas .....	oz..	19, 788

Zinci chloridi liquor.....	oz..	391,572
sulphas.....	oz..	49,701
Chloride of lime.....	lbs..	364,551

## HOSPITAL STORES.

Arrow root.....	lbs..	41,346
Barley.....	lbs..	169,329
Beef, extract of.....	lbs..	824,671
Candles, sperm or composition.....	lbs..	113,425
Cinnamon, powdered.....	lbs..	15,471
Cocoa or chocolate.....	lbs..	133,974
Coffee, extract of.....	gals..	33,813
Corn starch.....	lbs..	272,374
Desiccated egg.....	lbs..	97,788
Farina.....	lbs..	315,905
Gelatine shred.....	lbs..	13,443
Ginger, powdered.....	lbs..	18,893
Milk, concentrated.....	lbs..	669,098
Nutmegs.....	lbs..	15,076
Pepper, black, ground.....	lbs..	27,893
Porter, in pint bottles.....	bottles..	2,227,381
Sugar.....	lbs..	949,264
Tea.....	lbs..	471,387
Tapioca.....	lbs..	102,664

## INSTRUMENTS.

Amputating.....	sets..	1,339
and trephining.....	sets..	316
Buck's spongeholder for the throat.....	no..	8,703
Compact field cases.....	sets..	4,736
Cupping tins, assorted sizes.....	no..	115,672
Dissecting instruments.....	cases..	1,946
Exsecting instruments.....	sets..	261
General operating.....	sets..	352
Lancets, spring and thumb.....	no..	27,314
Minor operating.....	sets..	322
Obstetrical case.....	cases..	315
Personal instruments.....	sets..	355
Pocket case.....	cases..	15,769
Post mortem.....	sets..	177
Probangs.....	no..	64,765
Scarificators.....	no..	13,556
Scissors.....	no..	43,636
Speculum for the ear.....	no..	1,211
for the vagina, glass.....	no..	426
Stethoscopes.....	no..	3,093
Stomach pump, in case.....	no..	2,234
tube.....	no..	3,802
Syringe, enema, Davidson's.....	no..	7,845
rubber.....	no..	34,661
Tieman's universal.....	no..	1,041
hypodermic, 3 points.....	no..	2,093
penis, glass, in cases.....	no..	144,611
India-rubber.....	no..	8,615
metallic.....	no..	925
vagina, hard rubber, 1.....	cases..	500
glass, 2.....	cases..	257
Teeth-extracting instruments.....	cases..	8,734
Tongue depressor, hinged.....	no..	8,451
Tourniquets, field.....	no..	56,093
screw, with pads.....	no..	15,491
Trephining instruments.....	sets..	177
Trusses, inguinal, double.....	no..	6,667
single.....	no..	50,262
Vaccinator, spring.....	no..	3,690
Vaccine virus, issued as required.....	crusts..	43,353

## DRESSING, ETC.

e plaster.....	yards..	358,771
boards.....	pieces..	265,151



Cotton bats.....	no..	49,258
wadding.....	sheets..	46,595
Flannel, red.....	yards..	180,720
Gutta-percha cloth.....	yards..	135,794
Ichthyocolla plaster.....	yards..	215,690
Knapsacks, furnished.....	no..	5,022
Lint, patent, linen or flax.....	lbs..	197,208
picked or scraped linen.....	lbs..	72,647
Litters, hand.....	no..	53,200
horse.....	no..	1,612
Muslin, bleached, unsized, 1 yard wide.....	yards..	1,982,345
Napkins, for ophthalmia.....	no..	31,254
Needles, 25; cotton, 1 spool; thimble, 1; in case.....	no..	31,378
Oakum, fine, picked.....	lbs..	159,547
Oiled muslin, in 4½ yard pieces.....	yards..	63,060
silk, in 4½ yard pieces.....	yards..	93,929
Pencils, hair, (assorted sizes,) 12 in a vial.....	no..	223,472
Pins.....	papers..	140,218
Roller bandages.....	dozen..	741,807
Silk, green, for shades.....	yards..	14,882
saddlers', for ligatures.....	oz..	16,195
Splints, in one package.....	sets..	18,103
Smith's anterior.....	no..	25,852
Sponge, fine, small pieces.....	no..	349,452
Suspensory bandages, cotton.....	no..	156,569
Tape, cotton, or twilled stay binding.....	pieces..	185,428
woollen, or worsted binding.....	pieces..	13,133
Thread, linen, unbleached.....	oz..	66,397
Tow.....	lbs..	63,285
Towels.....	dozen..	124,997½
roller.....	dozen..	23,069
Twice, one-half coarse.....	oz..	440,432

## BOOKS AND STATIONERY.

Anatomy, Gray's.....	copies..	3,442
surgical, (of arteries,) Powers's.....	copies..	3,895
Chemistry, Fownes's.....	copies..	1,640
Dictionary, medical, Dunglison's.....	copies..	1,905
English, Webster's.....	copies..	617
Dispensatory, Wood & Bache's.....	copies..	4,850
Hygiene.....	copies..	3,100
Jurisprudence, Beck's.....	copies..	1,062
Midwifery, Bedford's.....	copies..	537
Pathology, Virchow's.....	copies..	893
Pharmacy, Parish's.....	copies..	1,333
Physiology, Dalton's.....	copies..	1,412
Practice of Medicine, Watson's.....	copies..	3,254
Bennett's.....	copies..	1,542
Principles of Medicine, Hartshorne's.....	copies..	1,237
Surgery, principles of, Erichsen's.....	copies..	5,370
Smith's, Stephen.....	copies..	3,251
McLeod's Surgical Notes.....	copies..	905
Guthrie's Commentaries.....	copies..	781
minor.....	copies..	2,671
Therapeutics, Stille's.....	copies..	1,026
Longmore on Gunshot Wounds.....	copies..	1,178
Jones on Diseases of the Eye.....	copies..	576
Toynbee on Diseases of the Ear.....	copies..	575
Wilson on Diseases of the Skin.....	copies..	476
Bumstead on Venereal Diseases.....	copies..	7,317
Hospital Steward's Manual, Woodward's.....	copies..	3,239
Blank books, cap, half bound, 4 quires.....	no..	85,345
Case book.....	no..	6,042
Envelopes, printed.....	no..	8,150,909
Ink, 2 oz. bottles.....	no..	131,866
Inkstands.....	no..	10,538
traveling.....	no..	6,574
Meteorological Register.....	no..	485
Morning Report books.....	no..	11,248
Mucilage.....	bottles..	30,674

Order and letter book.....	no..	6,044
Prescription book, hospital.....	no..	7,544
book, (blank, 4 quires).....	no..	33,150
Register of patients.....	no..	5,622
Regulations, army.....	copies..	634
medical department.....	copies..	1,367
Paper, filtering.....	packages..	11,335
wrapping.....	quires..	165,217
writing.....	quires..	577,130
Pens, steel.....	no..	997,657
Penholders.....	no..	75,544
Pencils, lead.....	no..	264,676
Portfolio, (cap size).....	no..	8,222
Sealingwax.....	sticks..	28,685

## BEDDING.

Bed sacks.....	no..	929,774
Beds, water, (of Indiar-ubber).....	no..	1,572
Blankets, white, (gray for the field).....	no..	1,637,076
Blanket cases, canvas.....	no..	19,094
Counterpanes, according to pattern.....	no..	627,014
Cushions, rubber, for air or water, with open centre.....	no..	9,290
small.....	no..	10,081
Gutta-percha bed covers.....	no..	51,774
Mattresses, hair.....	no..	72,238
of straw, moss, or shuck.....	no..	213,961
Mosquito bars.....	no..	297,768
Pillows, hair.....	no..	473,428
Pillow cases, cotton, colored.....	no..	1,125,406
linen, white.....	no..	392,590
ticks.....	no..	205,753
Sheets, linen.....	no..	2,355,021

## HOSPITAL CLOTHING.

Caps, according to pattern.....	no..	192,531
Drawers, according to pattern.....	no..	1,515,711
Gowns, dressing, according to pattern.....	no..	380,221
Shirts, cotton, according to pattern.....	no..	1,322,066
Slippers, according to pattern.....	no..	985,151
Socks, woollen, according to pattern.....	no..	2,050,411

## FURNITURE AND APPLIANCES.

## Class No. 1.

Basins, tin, small, for dressers.....	no..	52,611
wash, hand.....	no..	123,191
Bed pans, delf, shovel-shape.....	no..	38,431
Bedsteads, iron.....	no..	473,428
Bowls, delf.....	no..	275,481
Brooms.....	no..	149,061
Brushes, scrubbing.....	no..	60,721
Buckets, leather.....	no..	30,681
wooden.....	no..	61,061
Candlesticks.....	no..	36,041
Caldrons.....	no..	1,411
Cleavers.....	no..	2,311
Clothes lines.....	feet..	1,775,001
Close-stools.....	no..	12,611
Corks, assorted.....	dozen..	799,111
Corkscrews.....	no..	21,111
Cots, Chicago.....	no..	15,111
Cups, tin.....	no..	42,111
Dippers, tin, pint size.....	no..	64,111
Dishes, assorted sizes.....	no..	49,111
Feeding cups, or sick feeders.....	no..	17,111
Flesh forks.....	no..	2,111
Funnels, glass, $\frac{1}{4}$ pint.....	no..	6,111
tin, pint.....	no..	8,111
Graters, nutmeg, and large.....	no..	15,111
Hatchets.....	no..	15,111
Hone.....	no..	2,111

Knives and forks, of each.....	no..	620,775
carving, of each.....	no..	7,331
butcher.....	no..	6,538
bread.....	no..	6,607
Lanterns, glass.....	no..	44,316
Measures, graduated, glass, 4 oz.....	no..	18,791
minim.....	no..	8,672
tin, gallon to pint.....	no..	2,500
Medicine chests.....	no..	2,425
panniers, (furnished by the list).....	sets..	5,597
measuring glasses.....	no..	32,492
spoons, delf.....	no..	10,885
mess chests, (furnished by list).....	no..	5,023
Mills, coffee.....	no..	8,865
Mortars and pestles.....	no..	14,131
Mugs, delf.....	no..	227,929
Pill boxes, turned wood, papers.....	no..	154,988
Pill machine.....	no..	1,879
tiles, 5 to 10 inch.....	no..	8,296
Pitchers, delf, half gallon.....	no..	34,771
Plates, delf and tin.....	no..	493,663
Pots, chamber, delf.....	no..	56,911
inodorous, army pattern.....	no..	7,829
coffee, tin.....	no..	20,883
Rain gauge.....	no..	209
Ranges, with fixtures, complete.....	no..	426
Razors and strops.....	no..	12,656
Retort, delf, 1 quart.....	no..	1,300
Scales and weights, prescription.....	no..	8,693
shop.....	no..	2,426
Sheepskins, dressed, for plasters.....	no..	32,413
Slates.....	no..	2,683
Spatulas, 3 and 6 inch.....	no..	30,867
Spirit lamps.....	no..	2,236
Spoons, table.....	no..	472,677
tea.....	no..	232,910
Spit mugs, without tops.....	no..	42,139
Spittoons.....	no..	106,139
Steels.....	no..	2,391
Stoves, cooking, with fixtures complete.....	no..	2,096
Test tubes.....	no..	12,133
Thermometers and hygrometers.....	no..	935
Thermometers.....	no..	2,999
Tin warmers for stomach.....	no..	1,335
feet.....	no..	2,052
Tubs, bath.....	no..	1,504
Tumblers, glass.....	no..	102,842
Urinals, glass.....	no..	42,410
Vials, assorted.....	dozen..	214,972
Wood saws.....	no..	2,526
Wagons, medicine.....	no..	435
Medicine cases.....	no..	886

## Class No. 2.

Bed ticket frames.....	no..	433,910
Chairs.....	no..	93,603
Clocks, wooden, small.....	no..	5,651
Gridirons.....	no..	3,715
Kettles, tea, iron.....	no..	7,652
Ladles.....	no..	5,068
Looking-glasses, small.....	no..	20,949
Pans, frying.....	no..	3,306
sauce.....	no..	7,888
tin.....	no..	10,441
Pots, mustard.....	no..	5,981
pepper.....	no..	8,973
Refrigerator.....	no..	523
Sadirons.....	no..	8,664
Salt cellars.....	no..	16,578
Tables, bedside.....	no..	93,542
Trays, butler's.....	no..	2,268

# REPORT

## OF

# THE PAYMASTER GENERAL.

WAR DEPARTMENT, PAYMASTER GENERAL'S OFFICE,  
*Washington, October 20, 1866.*

SIR: I have the honor to submit a report of the official transactions of the pay department of the army for the fiscal year ending June 30, 1866.

The tabular statements herewith accompanying show in detail the following condensed results:

Balance in hands of paymasters and unissued requisitions in the treasury at the beginning of fiscal year (July 1, 1865,)	\$120, 106. 999 32
Received from the treasury during the fiscal year (including unissued requisitions in treasury on June 30, 1866).....	162, 100, 000 00
Received by paymasters from other sources, exclusive of sums transferred among themselves.....	1, 326, 228 97
Total to be accounted for.....	<u>283, 533, 228 29</u>
Accounted for as follows :	
Disbursements to the regular army.....	\$10, 259, 829 79
Disbursements to the Military Academy.....	171, 174 63
Disbursements to the volunteers.....	248, 943, 313 36
Total disbursements.....	<u>259, 374, 317 78</u>
Amount of unissued requisitions in the treasury on June 30, 1866.....	10, 750, 000 00
Balance actually in hands of paymasters on June 30, 1866..	13, 408, 910 51
Total.....	<u>283, 533, 228 29</u>

Of this large amount of disbursements during the fiscal year much the greater portion has been applied in final payments to disbanded volunteers. Two hundred and twenty thousand of these have been paid since the date of my last annual report, October 31, 1865.

In that report I stated the number of discharged troops then already paid or in process of payment (commencing with the previous 1st of June, when the disbanding of the armies began) at about 800,000. Add the 220,000 paid during the past twelve months, and we have a total of one million twenty thousand officers and men paid on discharge since the cessation of hostilities. More than nine-tenths of these were paid during the fiscal year.

The ordinary bi-monthly payments to troops in service, regular and volunteer, have, during the year, amounted to \$30,250,000.

Beside the final payments to discharged troops, and the current payments to troops in actual service, the claims for back pay and bounties, and extra pay to

officers and men which could not be fully settled on the rolls at the time of muster out, or have since been created by new enactments, have demanded and received the unremitted attention of the "division of referred claims" attached to this bureau. The returns of this division show that during the fiscal year there were received 58,878 individual claims, of which 34,477 were approved and paid, 13,189 returned disallowed, leaving on hand not yet examined 11,212; the disbursements for the period amounting to \$7,662,736. This department has also paid during the year 97,454 treasury certificates, issued by the Second Auditor, chiefly for arrears to heirs of deceased officers and soldiers, amounting to \$16,189,247.

The above items of expenditure for the fiscal year may be summarily stated as follows:

To mustered out troops .....	\$205, 272, 324
To troops in service.....	30, 250, 010
Referred claims .....	7, 662, 736
Treasury certificates.....	16, 189, 247
	<hr/>
Total .....	259, 374, 317
	<hr/> <hr/>

No payments have yet been made of the extra bounties provided by the law of July 28, 1866, nor will it be practicable to enter upon the payment of these till after a preliminary classification of them, giving a reasonable time for the applications to be received and arranged. Section fifteen of the act provides that their examination and payment shall be "made under such rules and regulations as may be prescribed by the Secretary of War." In conformity with this provision the rules and regulations prepared under your direction and supervision were promulgated through the Adjutant General of the army September 16, 1866. Paragraph one of these regulations is as follows: "All applications shall be filed within the period of six months from the first day of October, 1866, and before any payments are made, shall be classified by regiments, battalions, or other separate organizations, and no application filed after that period shall be settled until the former shall have been paid."

This is not only a wise and judicious provision, tending largely, under any circumstances, to facilitate the colossal labor involved, but it is more, a peremptory necessity, if the work is destined ever to be fully accomplished.

The only record in existence by which the validity of bounty claims under this law can be tested and ascertained, consists of the muster and pay rolls of the respective organizations to which claimants belonged, and which alone of the public records show their several histories, as to service, pay, bounty, &c. Of these rolls there is but one copy for each period in the archives of the government. The experience of the past year in the frequent handling, unfolding and refolding in the work of examination of individual claims, demonstrates that the rolls could not much longer resist the wear and tear of successive examinations; that, already much worn and defaced, they would be reduced to illegible shreds before a tithe of the cases arising under this law could be disposed of, if taken up separately. Hence the necessity of this regulation, not only that the purposes of the law may be consummated, but for the more important end of preserving, in their original integrity, most important public records.

But though this preliminary classification (enabling all claims pertaining to any one roll to be disposed of at one examination) imposes unavoidable delay at the outset, it will undoubtedly be the means of hastening the desired end, the ultimate payment of all. And such would be the case even if the safety of the records were not a consideration to be regarded.

The classification is now in rapid daily progress as the applications are re-

ceived, each being registered and filed as of the proper State, regiment, and company to which the claimant's name belongs. Even this preliminary labor is a huge one, the daily arrival of applications being counted by hundreds, each requiring a registry as above, as well as a separate letter of acknowledgment.

From these statements it is obviously apparent that payments in any considerable number of cases cannot begin till the six months' limitation of the regulations has passed.

At the date of my last annual report, besides the officers of the regular pay department, there remained in service two hundred and ten "additional paymasters" retained for volunteer payments. These are now reduced to fifty-nine, as follows :

Number to be accounted for.....	210
Mustered out during the year.....	145
Resigned .....	3
Died.....	3
Cashiered .....	1
	<hr/> 152
Now remaining in service.....	<hr/> 58

Appointments to original vacancies created in this department by the act of July 28, 1866, "to increase and fix the military peace establishment," not yet having been filled, the pay department of the regular army remains, as to organization and strength, without material change.

The clerical force employed by this bureau now consists of one hundred and fifty-five clerks of the various classes. This is the maximum war complement as provided by the various laws on the subject.

For more than a year, till August last, anticipating a reduction of this force as a necessary consequence of the close of the war and the disbandment of troops, I ceased to fill vacancies which from time to time occurred by reason of resignation, death, or other casualty, in the full confidence that the gradually diminishing labors of the bureau would justify such gradual reduction. This process had continued till the number of clerks was materially lessened. But the several acts of the closing days of the last session of Congress, making provision for extensive extra bounty allowance to discharged soldiers, white and colored, and extra pay to discharged volunteer officers, and expressly imposing the duties of examination and settlement upon this office, instead of the accounting officers of the treasury, as had theretofore been the uniform settled practice of the government, suddenly heaped upon the bureau such a vast accumulation of additional labor that I was compelled to ask of you the restoration of its clerical strength to the largest limit of the law. This, under your orders, has been done by transfers from the discontinued bureau of the Provost Marshal General, and by new appointments.

For the execution of these same extraordinary services, and for the payment of the continued vast issue of treasury certificates which devolves on the officers of this department, it is rendered indispensable temporarily to retain in service (after the muster-out of all volunteer organizations, and after the increased number of regular officers of the department provided by the law of July 28, 1866, have been appointed and qualified) a number, not exceeding twenty, of the additional paymasters.

As these bounty and other claims referred to pertain almost exclusively to the volunteer service, such retention of additional paymasters is sanctioned by the law which creates them, (act of July 5, 1838, chapter 162.) The necessity is an imperative one, as the total of sixty regular paymasters, now authorized,



will be no more than sufficient for the performance of their appropriate duties of paying the army in service.

So far as advised and believed, there has been no delinquency in the prompt performance of all the requirements of this department. The troops in service have been regularly paid, and the demands of those discharged or mustered out promptly met in all cases.

In closing this report, I am gratified to be able to renew the very favorable statement with which I closed my report of last year. After further large disbursements, and the closing of the accounts of other one hundred and fifty-two paymasters discharged, I am enabled to reiterate the unprecedented result, that since July, 1861, in the expenditure of one thousand and eighty-three millions of dollars disbursed by this department in minute sums, and surrounded by difficulties and hazards, the total cost to the government, in expenses and losses of every character, cannot, in the worst possible event, exceed three-fourths of one per cent. And in this estimate I include the large loss of paymasters' deposits by the fraudulent bankruptcy of a national bank in this city. That bank, however, being an authorized designated depository of the treasury, whatever may have been the delinquency of an individual paymaster, the responsibility for the public loss can in no just sense attach to this department.

Respectfully submitted :

B. W. BRICE,  
*Paymaster General.*

Hon. EDWIN M. STANTON,  
*Secretary of War.*

*Statement showing the amount in the hands of each of the disbursing officers of the pay department, and unaccounted for on the 1st of July, 1865; the amount remitted to each from the treasury, or turned over by other agents, during the fiscal year ending June 30, 1866; the amount accounted for by accounts and vouchers of expenditures, or by transfer or replacement in the treasury, and the balance remaining unaccounted for, to be applied to payments in the first quarter of the next fiscal year.*

Paymasters.	Balances in hands of paymasters and unaccounted for July 1, 1865.	Remitted from treasury, and turned over by other agents, in the year ending June 30, 1866.	Total amount received and to be accounted for.	Amount expended in paying regular troops.	Amount expended in paying volunteers.	Amount expended in paying Military Academy.
<b>REGULARS.</b>						
Hiram Leonard .....	\$1,585,628 59	\$4,368,702 83	\$5,954,331 42	.....	.....	.....
Nathan W. Brown .....	6,732,967 07	15,535,297 36	22,268,264 43	\$18,049 61	\$29,608 39	.....
Thomas J. Leslie .....	20,310,284 59	57,946,499 87	78,256,784 46	22,649 62	316 95	.....
Cary H. Fry .....	6,222 89	621,511 25	627,734 14	404,622 94	197,433 19	.....
Renjamin Alvord .....	.....	535,262 96	535,262 96	230,491 52	271,117 30	.....
Franklin E. Hunt .....	1,961,526 80	7,369,157 22	9,330,684 02	3,977 31	.....	.....
Samuel Woods .....	13,635 75	267,361 96	280,997 71	46,512 93	182,485 80	.....
Daniel McClure .....	10,706,573 07	33,107,286 00	43,813,859 07	.....	.....	.....
Thomas M. Winston .....	5,268,391 30	31,590,852 29	36,859,243 59	.....	.....	.....
Augustus H. Seward .....	.....	9 50	9 50	.....	.....	.....
Robert A. Kinzie .....	499,995 22	1,144,310 53	1,644,305 75	26,134 15	112,187 26	.....
George L. Febiger .....	153,745 90	4,894,528 14	5,048,274 04	155,225 23	646,808 60	.....
William S. Wallace .....	1,679 19	86,152 98	87,832 17	.....	83,643 47	.....
David Taggart .....	673,443 85	8,143,353 28	8,816,797 13	80,231 52	2,308,430 45	.....
Adam D. Steuart .....	.....	1,585,620 54	1,585,620 54	169,940 53	1,271,548 80	\$45,648 10
Henry C. Pratt .....	.....	2,626,240 64	3,079,065 80	546,912 74	715,794 53	125,526 53
Simeon Francis .....	452,825 16	382,908 34	424,969 02	63,092 38	212,058 89	.....
John A. Whittall .....	42,060 68	302,549 24	313,347 14	27,714 40	92,381 25	.....
Simeon Smith .....	10,797 90	5,539,690 31	5,570,807 54	8,496 21	1,257,963 03	.....
Charles T. Larned .....	171,191 38	8,875,573 00	9,046,764 38	3,247 99	394,558 21	.....
Edward Wright .....	5,237 82	622,861 36	628,099 20	80,787 48	417,693 56	.....
John P. Brua .....	.....	223,285 91	223,285 91	65,444 92	145,320 14	.....
Rodney Smith .....	176,131 25	478,750 88	654,882 13	121,875 08	431,778 85	.....
J. B. M. Potter .....	37,044 21	900,369 90	937,414 11	838,002 95	58,214 58	.....
Total .....	48,840,490 85	187,148,136 31	235,988,636 16	2,913,410 11	8,829,373 25	171,174 63

## VOLUNTEERS.

Daniel H. McPhail .....	1, 625, 100 00	8, 042, 545 15	9, 667, 645 15	24, 313 77	706, 215 12
William P. Gould .....	60, 406 19	802, 077 90	862, 484 09	20, 647 23	1, 538, 081 92
David Taylor .....	60, 095 74	1, 544, 394 72	1, 604, 490 46	1, 438 44	696, 785 75
Dwight Bannister .....	6, 747, 221 75	17, 567, 560 19	24, 314, 781 94		514 29
E. E. Paulding .....	11, 368, 701 23	10, 338, 444 74	21, 707, 145 97		164, 081 48
John H. Kinzie .....	123, 574 06	260, 002 00	383, 576 06	1, 799 48	282, 277 58
Joseph A. Nunes .....	4, 806 24	1, 040, 609 75	1, 045, 415 99		790, 768 43
Thomas H. Halsey .....	50, 834 08	1, 260, 178 55	1, 311, 012 63	160, 759 56	194, 558 93
William Patten .....	178, 753 98	738, 090 56	916, 844 54	1, 379 16	1, 135, 211 85
Edwin D. Judd .....	76, 321 76	1, 568, 500 76	1, 644, 822 52	15, 544 02	611, 902 39
C. P. E. Johnson .....	20, 540 63	1, 027, 646 48	1, 048, 187 11	63, 199 17	1, 137, 218 92
Thomas S. Allison .....	109, 347 07	1, 221, 128 62	1, 330, 475 69	4, 104 48	
William Allen .....	11, 411, 305 61	9, 103, 904 60	20, 515, 210 21		
Frederick Robie .....	74, 329 38	2, 349, 776 30	2, 424, 105 68	60, 643 51	2, 084, 770 15
William B. Rochester .....	8, 656 89	1, 396, 793 78	1, 405, 450 67		1, 287, 770 34
Edwin C. Morse .....	10, 164 55	999, 096 98	1, 009, 261 53		760, 381 68
Milton J. Stone .....	55 95		55 95		
Jacob A. Camp .....	44, 608 54	950, 213 93	994, 822 47		565, 027 91
Horace A. Hutchins .....	43, 728 70	1, 251, 379 98	1, 295, 108 68		231, 617 30
Henry B. Reese .....	141, 851 76	15, 751, 661 55	15, 893, 513 31	7, 115 11	2, 702, 479 02
Joseph A. Lawyer .....	1, 066 70	809, 163 32	810, 230 02	2, 493 29	713, 858 60
Roland G. Usher .....	141, 530 09	6, 388, 488 20	6, 530, 018 29	2, 406 64	333, 610 75
Coates Kinney .....	300, 349 79	1, 026, 679 84	1, 327, 029 63	502 92	739, 168 83
Henry L. King .....	153, 886 42	400, 000 00	553, 886 42		458, 578 14
George Marston .....	72, 056 51	643, 595 86	715, 652 37	56, 568 56	169, 596 51
Charles S. Jones .....		866, 310 00	866, 310 00		745, 399 07
F. W. Crane .....	27, 087 94	539, 187 43	566, 275 37	4, 298 76	410, 137 00
John H. McBlair .....	51, 703 85	40, 200 56	91, 904 41	115 55	77, 376 33
John L. Hodge .....	297, 855 41	7, 233, 771 54	7, 531, 626 95		56, 090 02
Lyman S. Hapgood .....	20, 850 10	928, 249 06	949, 099 16		897, 305 74
Alban V. Elliott .....	4, 518, 994 27	6, 019, 586 82	10, 538, 581 09	28, 159 69	296, 215 45
Anthony Ten Eyck .....	193, 020 53	1, 075, 000 00	1, 268, 020 53	6, 431 49	308, 017 07
Nathan S. Brinton .....	5, 348 11	525, 172 56	530, 520 67		521, 309 04
James H. Phinney .....	973, 870 01	1, 778, 413 25	2, 752, 283 26	18, 395 83	795, 617 16
Columbus S. Stevenson .....	38, 430 38	1, 450, 004 95	1, 488, 435 33	701 43	216, 448 60
Samuel A. Safford .....	384, 574 04	1, 350, 264 24	1, 734, 838 28		1, 453, 492 13
Abram W. Hendricks .....	9, 980 59	715, 047 08	725, 027 67		712, 278 59
Amos Binney .....	3, 696, 809 50	3, 070, 137 95	6, 766, 947 45		1, 373 48
Robert L. Wilson .....	25, 012 70	373, 751 38	398, 764 08		397, 826 25

Richard H. Whiting .....	21, 952 06	4, 012, 973 74	4, 034, 925 80	47, 394 79	2, 066, 686 93	.....
James R. Mears .....	76, 925 09	1, 945, 517 40	2, 022, 442 49	.....	1, 506, 103 15	.....
Samuel E. Adams .....	5, 059 82	997, 000 00	1, 002, 059 82	.....	821, 668 21	.....
Daniel L. Eaton .....	6, 996 77	867, 268 31	874, 265 08	60, 470 95	748, 633 51	.....
W. Penn Clarke .....	.....	1, 530, 709 56	1, 530, 709 56	.....	1, 039, 823 71	.....
Anson L. Brewer .....	72, 220 50	426, 128 68	498, 349 18	.....	420, 320 26	.....
J. E. Burbank .....	37, 444 38	2, 100, 268 89	2, 137, 713 27	112, 277 68	694, 791 03	.....
E. Stilman Bailey .....	69, 692 27	2, 047, 816 14	2, 117, 508 41	.....	932, 130 90	.....
T. L. Carnahan .....	1, 041 76	2, 662, 818 72	2, 663, 860 48	.....	2, 533, 499 76	.....
Guy K. Cleveland .....	17, 886 79	905, 000 00	922, 886 79	.....	899, 801 18	.....
John P. McGrath .....	79, 813 95	1, 351, 943 05	1, 431, 757 00	43, 595 68	1, 095, 436 87	.....
George W. Dyer .....	13, 033 47	617, 177 77	630, 211 24	.....	606, 654 76	.....
Edmund H. Gratiot .....	90, 015 45	1, 499, 906 05	1, 589, 921 50	52, 835 88	1, 399, 918 07	.....
Samuel C. Harbert .....	5, 346 10	441, 149 29	446, 495 39	.....	443, 537 84	.....
William Holloway .....	23 53	1, 702, 420 00	1, 702, 443 53	.....	1, 539, 571 79	.....
Andrew C. Hewey .....	20, 092 67	60, 000 00	80, 092 67	.....	59, 707 91	.....
Wilson S. Kennon .....	32, 137 16	769, 493 34	801, 630 50	.....	560, 350 75	.....
Brantz Meyer .....	39, 231 05	1, 617, 157 86	1, 656, 388 91	271, 873 57	332, 549 55	.....
William S. Stryker .....	7, 943 33	9, 378, 988 64	9, 386, 931 97	41, 574 38	1, 205, 231 52	.....
G. W. Williams .....	36, 883 96	1, 225, 173 82	1, 262, 057 78	10, 869 21	1, 000, 690 21	.....
James W. Nicholls .....	12, 210 21	520, 190 50	532, 400 71	483, 510 89	19, 306 37	.....
George B. Ely .....	27, 786 89	737, 055 33	764, 842 22	.....	754, 568 24	.....
Jacob Sallade .....	.....	768, 091 86	768, 091 86	1, 325 19	720, 128 77	.....
William S. Lamb .....	65 82	567, 774 88	567, 840 70	.....	560, 887 37	.....
Robert A. Haggarty .....	26, 308 96	450, 000 00	476, 308 96	.....	451, 638 66	.....
Anson Sperry .....	134, 150 97	660, 844 67	794, 995 64	.....	564, 354 23	.....
E. Van Vaulkenburgh .....	416, 042 36	848, 107 80	1, 264, 150 16	.....	1, 137, 502 39	.....
N. M. Knapp .....	1, 600 00	895, 146 37	896, 746 37	.....	842, 110 31	.....
William H. McAllister .....	56, 275 03	861, 895 59	918, 170 62	.....	836, 924 51	.....
Levi C. Ball .....	3, 820 86	100, 000 00	103, 820 86	.....	52, 363 42	.....
Josiah F. Price .....	.....	1, 307, 989 22	1, 307, 989 22	.....	1, 015, 483 52	.....
James L. Cramer .....	1, 163 56	1, 570, 199 35	1, 571, 362 91	.....	1, 010, 365 15	.....
Edmund Gifford .....	.....	108, 000 00	108, 000 00	.....	83, 991 20	.....
George F. Carpenter .....	66, 904 79	983, 445 00	1, 050, 349 79	.....	986, 102 32	.....
Benton McConnell .....	82, 581 54	390, 431 75	473, 013 29	.....	328, 965 67	.....
Robert Smith, (Wisconsin) .....	78, 301 98	364, 767 00	443, 068 98	1, 032 45	17, 087 21	.....
James R. Loffland .....	9, 239 39	2, 397, 982 75	2, 407, 222 14	9, 723 04	2, 281, 814 45	.....
Daniel M. Adams .....	2, 259 41	341, 338 58	343, 597 99	29, 170 55	198, 967 74	.....
Joseph H. Mayborn .....	990 00	1, 394, 143 51	1, 395, 133 51	.....	1, 184, 280 03	.....
John B. Lockwood .....	26, 692 72	7, 458 64	34, 151 36	.....	.....	.....
William J. Wood .....	7, 124 86	265, 634 45	292, 759 31	.....	274, 372 94	.....

Statement showing the amount in the hands of each of the disbursing officers of the pay department, &amp;c.—Continued.

Paymasters.	Balances in hands of paymasters and unaccounted for July 1, 1865.	Remitted from treasury, and turned over by other agents, in the year ending June 30, 1866.	Total amount received and to be accounted for.	Amount expended in paying regular troops.	Amount expended in paying volunteers.	Amount expended in paying Military Academy.
VOLUNTEERS—Continued.						
Robert G. Hunt .....	\$2 55	\$1,516,418 05	\$1,516,420 60	.....	\$1,423,833 03	.....
Henry W. Scovel .....	117,358 32	1,839,363 54	1,956,721 86	\$56,927 13	1,136,399 26	.....
Justus M. Phelps .....	43,389 72	2,042,180 83	2,085,570 55	169,697 09	1,689,261 48	.....
Charles L. Scholefield .....	123,001 67	335,067 50	458,069 17	.....	310,004 00	.....
Charles L. Bernay .....	855 91	772,000 00	772,855 91	23,455 55	630,001 41	.....
William Phelps .....	385,597 93	450,000 00	835,597 93	.....	367,238 79	.....
W. P. Stoms .....	99,735 35	1,313,729 84	1,413,465 19	853 03	1,049,512 91	.....
Walter Crane .....	35,530 45	745,602 03	781,132 48	.....	424,965 30	.....
Samuel M. Reynolds .....	22,707 72	440,582 14	469,289 86	.....	404,154 05	.....
Harlan P. Wolcott .....	1,293 06	2,124,169 70	2,125,462 76	12,415 15	1,973,211 09	.....
Jesse Bowen .....	34,798 52	1,637,346 90	1,672,145 42	24,956 49	1,311,630 75	.....
Dudley W. Rhodes .....	32,343 51	551,100 90	583,444 41	.....	313,981 86	.....
Wellington Vrooman .....	53,958 50	3,525,801 66	3,579,760 16	145,766 85	2,506,037 05	.....
Champion S. Chase .....	.....	1,114,120 00	1,114,120 00	.....	721,799 47	.....
George B. Congdon .....	5,878 50	1,610,059 15	1,615,937 65	.....	1,252,120 36	.....
Josiah Tilden .....	5,261 44	2,010,030 15	2,015,291 59	.....	1,496,035 90	.....
Marshall Grover .....	1,527 78	2,275,666 42	2,277,194 20	.....	1,913,940 70	.....
N. C. Sawyer .....	8,898 88	742,735 70	751,624 58	35,868 29	531,657 45	.....
Henry C. Grout .....	26,134 12	230,000 00	256,134 12	.....	215,531 18	.....
B. B. Hammond .....	28,649 38	730,230 47	758,879 85	754 92	344,665 03	.....
John S. Herrick .....	.....	400,969 62	400,969 62	.....	172,172 12	.....
William C. Lupton .....	60,503 67	1,408,973 25	1,469,476 92	802 96	1,180,483 27	.....
George Truesdale .....	1,513 44	1,361,090 43	1,362,603 87	45,876 06	705,391 91	.....
James S. Thurston .....	372,519 05	2,696,665 53	3,069,184 58	30,231 52	2,531,053 86	.....
Robert D. Clarke .....	8,977 38	839,258 83	848,236 21	22,711 08	616,642 98	.....
John H. Dolman .....	8,723 92	2,468,000 00	2,476,723 92	.....	689,985 74	.....
Owen T. Turney .....	27,805 15	1,632,664 26	1,660,469 41	182,728 50	1,367,717 02	.....
Chambers Balrd .....	3,238 37	712,527 05	715,765 42	04,770 13	502,505 04	.....
Charles R. Littlefield .....	304,169 72	1,175,033 33	1,479,203 05	.....	1,101,968 82	.....

B. L. Martin	116, 279 26	1, 543, 579 06	1, 416, 862 67	1, 416, 862 67
W. H. H. Allen	1, 859 87	1, 300, 000 00	10, 586 62	1, 288, 732 12
David T. Dickson	6, 853 59	2, 325, 065 74	5, 529 77	1, 438, 059 20
Peter P. G. Hall	95, 029 79	1, 047, 000 00	65 75	1, 457, 112 68
George B. Dudley	26, 536 70	390, 530 00		478, 685 43
George W. Catdee	409, 815 74	961, 086 20		928, 398 59
Josiah D. Pulsifer		599, 116 46		568, 277 60
Zachariah Voorhis		1, 990, 749 26	57, 841 94	1, 640, 739 14
Thomas P. Haviland	92, 835 40	1, 297, 850 19		976, 633 71
John N. Scott	3, 806 16	2, 438, 000 00		862, 849 45
Mark Hollingshead	34, 296 12	3, 350, 331 25	42, 246 53	610, 043 55
Joseph Harris		1, 793, 919 10		1, 578, 464 15
Warren C. Emerson	128, 154 62	1, 004, 170 19	13, 254 50	733, 624 13
Thomas J. Saunders	250, 500 00	604, 596 80	21, 667 75	650, 532 27
Charles Crawford	5, 263 62	1, 158, 126 89		290, 948 60
Michael S. Gunckel		1, 409, 043 58		1, 398, 947 92
Horace H. Hunn	179, 140 76	1, 575, 192 26	70, 343 70	1, 399, 317 19
Rufus Haywood		1, 051, 069 20		731, 104 79
S. V. Holliday	724, 029 66	349, 912 03		466, 727 75
James H. Nelson	8, 383 63	1, 417, 373 73	168, 809 50	886, 337 72
Albert P. Shreve	254, 737 43	989, 946 42	12, 196 30	916, 357 12
H. W. Snyder	292, 213 33	1, 725, 721 78	46, 694 64	510, 897 03
Frederick C. Farr	48, 073 68	549, 000 00		583, 422 73
William D. Thompson	4, 842 94	440, 085 65		366, 729 03
Charles F. Wilson	151, 508 13	9, 236, 647 91	17, 987 69	980, 874 73
John S. Walker	11, 115 26	4, 360, 059 19	314 37	907, 258 63
William H. Jones	63, 720 16	2, 288, 771 00	417 26	1, 212, 952 29
P. Edwin Dye	23, 323 13	276, 000 00	5, 495 46	218, 583 84
Nathan G. King	14, 849 65	1, 375, 106 56	1, 154 26	1, 364, 076 77
James Lupton	1, 488 25	2, 189, 617 05	24, 118 29	2, 154, 212 12
E. D. Reddington		1, 282, 359 82		1, 273, 955 98
Fenton F. Stevens	4, 823 67	1, 841, 160 50	1, 690 56	1, 075, 705 52
Joseph W. Drew	35, 279 60	650, 946 30	18, 234 09	527, 059 00
Benjamin L. Hewitt	14, 989 29	46, 229 37		44, 124 87
W. D. Wheeler	16, 008 05	891, 626 78		831, 874 53
John F. Walden	254, 083 48	1, 098, 910 79	1, 537 87	1, 112, 568 63
Martin Evans	4, 962 32	987, 000 00		464, 374 48
Hiram F. Hale	990 00	675, 909 22		669, 682 09
Oscar Adams	41, 242 17	721, 656 99	4, 624 85	692, 906 97
Robert H. Howell	65, 178 31	640, 519 87	3, 416 09	519, 371 22
Charles S. Moore	100, 712 76	1, 920, 495 29		1, 308, 761 32



Statement showing the amount in the hands of each of the disbursing officers of the pay department, &c.—Continued.

Paymasters.	Balances in hands of paymasters and unaccounted for July 1, 1865.	Remitted from treasury, and turned over by other agents, in the year ending June 30, 1866.	Total amount received and to be accounted for.	Amount expended in paying regular troops.	Amount expended in paying volunteers.	Amount expended in paying Military Academy.
<b>VOLUNTEERS—Continued.</b>						
Freeland D. Herbert.....	\$8,632 73	\$1,290,677 10	\$1,299,309 83	.....	\$1,092,026 13	.....
Henry Almstedt.....	211,958 48	681,766 41	893,724 89	\$17,364 79	682,527 34	.....
Frederick Kelly.....	91,696 77	951,161 30	1,042,858 07	26,023 68	811,386 96	.....
John M. Muscott.....	5,261 52	225,000 00	230,261 52	.....	29 70	.....
R. W. McLaughry.....	13,670 41	557,516 89	571,187 30	.....	564,607 71	.....
G. M. McConnell.....	2,901 06	270,252 00	273,153 06	.....	265,407 89	.....
John S. Klein.....	61,455 44	400,707 78	462,163 22	.....	446,485 17	.....
Samuel Grisson.....	4,932 35	821,387 67	826,320 02	.....	676,659 01	.....
George W. DeCosta.....	32,714 82	454,218 49	486,933 31	.....	320,888 46	.....
William R. Snyder.....	267,842 30	1,043,639 48	1,311,481 78	79,235 61	1,086,250 32	.....
Charles W. Wingard.....	12,516 62	2,766,354 83	2,778,871 45	37,101 86	1,877,537 32	.....
James H. Young.....	12,851 63	1,242,960 33	1,255,811 96	81,926 88	557,438 47	.....
Samuel A. Pearce, jr.....	189 81	4,005,640 74	4,005,830 55	.....	749,388 23	.....
Andrew H. Young.....	17,220 11	471,056 90	488,277 01	.....	458,620 60	.....
A. C. Varnum.....	55,815 49	135,399 50	191,214 99	1,084 18	139,248 15	.....
William D. Stuart.....	627,000 79	206,224 05	833,224 84	.....	748,329 57	.....
William C. Woodson.....	66 64	937,269 39	937,336 03	.....	519,561 73	.....
Thomas H. Gardner.....	9,563 52	790,169 11	799,732 63	43,150 75	697,997 92	.....
A. G. Salisbury.....	35,035 80	1,698,670 92	1,733,706 72	21,232 73	977,881 92	.....
W. B. C. Pearsons.....	28,074 34	39,000 00	67,074 34	.....	16,574 75	.....
Charles C. Jones.....	430,633 15	.....	430,633 15	.....	398,094 60	.....
James P. Canby.....	9,156 68	1,125,916 96	1,135,073 54	.....	828,114 17	.....
Henry S. Goddard.....	31,177 39	669,579 18	700,756 57	.....	694,504 67	.....
William K. Patrick.....	828 00	1,909,600 40	1,910,428 40	3,716 41	378,361 95	.....
Foster A. Hixon.....	3,832 15	1,585,146 62	1,588,978 77	126,418 51	1,020,779 16	.....
C. S. Underwood.....	9,438 69	2,265,337 00	2,274,775 69	.....	1,407,057 58	.....
Israel O. Dewey.....	84,836 59	695,621 57	780,478 16	11,349 07	362,686 97	.....
Joel A. Fishbein.....	215,605 08	304,020 77	519,626 45	47,083 78	408,187 27	.....
William T. Anson.....	3,028 58	357,907 95	360,936 53	5,882 22	208,000 70	.....

Henry G. Nims.....	35,281 33	1,134,385 79	1,169,667 12	.....	667,289 29	.....
William H. Stewart.....	74,966 18	1,382,600 00	1,457,566 18	.....	1,137,716 48	.....
Albert McKinney.....	56,337 30	1,256,000 00	1,312,337 30	.....	647,840 47	.....
Joseph D. Atwell.....	1,466 10	1,694,424 61	1,695,890 71	25,556 16	1,474,888 46	.....
Franklin Ames.....	2,762 60	5,030,398 40	5,033,161 00	50,740 75	761,752 73	.....
Matthew J. McKeon.....	362,076 05	1,190,122 77	1,552,198 82	.....	.....	.....
Nathaniel A. Tucker.....	164,110 11	679,575 89	843,686 00	.....	656,512 19	.....
Henry L. Williams.....	167,637 65	2,016,557 93	2,184,195 58	.....	1,185,938 05	.....
Elbert V. Carter.....	14,802 88	1,394,026 01	1,408,828 89	.....	876,665 56	.....
John H. Ellis.....	27,037 78	831,146 62	858,184 40	17,647 04	805,743 07	.....
Charles O. Benedict.....	5,126 33	439,413 63	444,539 96	.....	427,543 85	.....
Francis M. Smith.....	30,835 00	673,778 84	704,613 84	.....	545,780 13	.....
Pierre Van Alstyne.....	910,303 69	922,981 99	1,833,285 68	.....	776,099 31	.....
William Williams.....	463,416 50	1,217,727 37	1,681,143 87	.....	1,051,553 00	.....
Bradley M. Thompson.....	95,081 16	2,103,150 00	2,198,231 16	.....	1,676,771 33	.....
John J. Ladd.....	41,654 88	759 57	42,414 45	.....	7,938 59	.....
John A. Pitzer.....	102,818 50	417,336 09	520,154 59	.....	515,380 72	.....
Frank H. Fletcher.....	.....	1,047,363 90	1,047,363 90	41,142 85	723,617 56	.....
Philo Bundy.....	57,267 88	301,000 00	358,267 88	.....	254,982 16	.....
Gilbert Wadleigh.....	8,769 46	457,331 94	466,101 40	.....	129,231 06	.....
Joseph Poole.....	56,812 43	2,319,021 94	2,375,834 37	9,055 02	618,737 21	.....
Philip Filer.....	8,417 25	320,787 58	329,204 83	831 03	321,397 72	.....
George P. Sanford.....	.....	425,062 80	425,062 80	.....	371,174 22	.....
George B. Corkhill.....	99,330 33	200,000 00	299,330 33	.....	115,703 39	.....
David Gribben.....	26,079 58	1,464,650 79	1,490,730 37	9,507 60	772,609 62	.....
Edward Spear, jr.....	60,247 30	911,068 70	971,316 00	.....	944,182 59	.....
Total.....	71,266,500 32	526,322,447 71	597,588,947 18	7,346,419 68	240,113,940 11	.....

Statement showing the amount in the hands of each of the disbursing officers of the pay department, &amp;c.—Continued.

Paymasters.	Am'ts turned over to other agents or replaced in the treasury.	Total amount accounted for.	Balance's remaining unexpended and to be applied to payments in next fiscal year.	Am't of requisitions included in balances not receiv'd by the paymasters on June 30, 1866.	Actual balances in the hands of paymasters.	Remarks.
<b>REGULARS.</b>						
Hiram Leonard .....	\$4,399,500 00	\$5,954,331 42	\$1,554,831 42	\$300,000 00	\$1,254,831 42	
Nathan W. Brown .....	20,843,520 52	22,268,264 43	1,377,025 91	750,000 00	627,025 91	
Thomas J. Leslie .....	69,342,054 76	78,256,744 46	8,891,763 13	6,000,000 00	2,891,763 13	
Cary H. Fry .....	10,264 32	627,734 14	15,413 69	.....	15,413 69	
Benjamin Alvord .....	17,185 35	535,262 96	16,468 79	.....	16,468 79	
Franklin E. Hunt .....	8,798,329 86	9,330,694 02	528,316 85	.....	528,316 85	
Samuel Woods .....	5,167 14	220,997 71	46,831 84	.....	46,831 84	
Daniel McClure .....	43,343,859 07	43,813,859 07	470,000 00	250,000 00	220,000 00	
Thomas M. Winslow .....	36,859,243 59	36,859,243 59	.....	.....	.....	
Augustus H. Seward .....	9 50	9 50	.....	.....	.....	
Robert A. Kinzie .....	1,063,624 86	1,644,305 75	442,359 48	.....	442,359 48	
George L. Febiger .....	4,221,915 53	5,048,274 04	24,324 08	.....	24,324 08	
William S. Wallace .....	4,188 70	87,832 17	.....	.....	.....	Retired March 7, 1866.
David Taggart .....	6,401,741 21	8,816,797 13	26,393 95	.....	26,393 95	
Adam D. Stewart .....	41,882 35	1,585,620 54	56,600 76	.....	56,600 76	
Henry C. Pratt .....	1,677,444 47	3,079,065 80	13,387 53	.....	13,387 53	
Simeon Francis .....	134,144 24	424,969 02	15,673 51	.....	15,673 51	
John A. Whitall .....	164,333 70	313,347 14	28,917 79	.....	28,917 79	
Simeon Smith .....	4,288,245 69	5,570,807 54	16,102 61	.....	16,102 61	
Charles T. Larned .....	7,408,947 24	9,046,764 38	1,240,010 94	1,150,000 00	90,010 94	Died March 31, 1866.
Edward Wright .....	123,091 18	628,099 20	6,526 98	.....	6,526 98	
John P. Brua .....	1,226 90	223,245 91	11,293 95	.....	11,293 95	
Rodney Smith .....	39,378 54	654,882 13	61,849 66	.....	61,849 66	
J. B. M. Potter .....	20,453 72	937,414 11	20,712 86	.....	20,712 86	
Total .....	209,209,812 44	235,928,636 16	14,864,865 73	8,450,000 00	6,414,865 73	

## REPORT OF THE SECRETARY OF WAR.

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Statement showing the amount in the hands of each of the disbursing officers of the pay department, &c.—Continued.

Paymasters.	Am'ts turned over to other agents or replaced in the treasury	Total amount accounted for.	Balance's remaining unexpended and to be applied to payments in the next fiscal year.	Am't of requisitions included in balances not received by the paymasters on June 30, 1866.	Actual balances in the hands of paymasters.	Remarks.
<b>VOLUNTEERS—Continued.</b>						
W. H. Scott.....	\$49,993 60	\$1,109,804 56	\$11,112 54	.....	\$11,112 54	Mustered out Nov. 15, 1865.
J. O. Culver.....	428,488 05	1,001,036 68	.....	.....	.....	Mustered out Dec. 1, 1865.
George Phelps.....	157,049 87	1,291,571 54	.....	.....	.....	Mustered out Jan. 15, 1866.
Charles W. Campbell.....	75,168 65	1,013,939 31	.....	.....	.....	Died Dec. 3, 1865.
Charles F. Davies.....	651,732 24	1,262,626 69	.....	.....	.....	Dishonorably discharged
Moses F. Webb.....	52,724 06	312,014 94	10,000 00	.....	10,000 00	Sept. 11, 1865.
George A. Mitchell.....	1,308,925 05	2,528,140 69	.....	.....	.....	.....
Robert P. Dodge.....	8,166,813 91	8,785,305 26	544,328 60	\$500,000 00	44,328 60	.....
Valentine C. Hanna.....	1,701,810 07	3,055,152 33	456 19	.....	456 19	.....
M. L. Martin.....	605 69	4,283 58	1,537 82	.....	1,537 82	Resigned April 28, 1865.
Charles J. Sprague.....	13,353 00	311,630 16	31,076 22	.....	31,076 22	.....
William Smith.....	73,973 39	1,152,762 02	8,338 94	.....	8,338 94	.....
William G. Terrell.....	29,606 52	501,310 22	.....	.....	.....	.....
Orlando S. Witherell.....	67,678 61	655,440 05	.....	.....	.....	Mustered out Dec. 1, 1865.
Martin L. Bundy.....	2,771,783 66	3,638,198 71	.....	.....	.....	Mustered out Nov. 15, 1865.
John A. L. Morrell.....	141,762 61	739,571 29	.....	.....	.....	Mustered out April 15, 1866.
Thomas B. Oakley.....	27,011 70	154,045 36	.....	.....	.....	Mustered out April 30, 1866.
Frank M. Eting.....	21,155,075 13	21,819,060 37	200,000 00	200,000 00	.....	Mustered out Jan. 12, 1866.
William H. Johnson.....	1,948,996 77	2,983,034 37	72,768 93	.....	72,768 93	.....
Nicholas Vedder.....	168,803 81	1,563,394 72	7,838 88	.....	7,838 88	.....
Oliver Holman.....	106,416 42	1,257,726 98	2,658 00	.....	2,658 00	Mustered out Dec. 1, 1865.
William Tillman.....	16,064,288 58	17,459,295 71	.....	.....	.....	Mustered out Jan. 15, 1866.
Russell Errett.....	2,178,089 45	3,257,474 24	.....	.....	.....	Mustered out May 11, 1866.
Frank Bridgman.....	11,422,425 29	12,521,146 16	65,400 18	.....	65,400 18	.....
John W. Newell.....	1,764,392 72	3,121,667 90	4,908 69	.....	4,908 69	.....
William J. Martin.....	2,236 36	309,535 52	27,565 05	.....	27,565 05	.....
Robert B. Webb.....	67,961 84	904,046 84	42,248 52	.....	42,248 52	.....
William M. Wiley.....	7,201,829 57	7,535,461 07	.....	.....	.....	Mustered out Mar. 15, 1866.
Luther T. Thustan.....	6,007,020 50	7,050,963 57	.....	.....	.....	Mustered out April 30, 1866.

Richard P. L. Baber .....	76,059 46	938,546 79	14,351 22	.....	14,351 22	.....	Mustered out Nov. 15, 1866.
Robert Smythe.....	3,803,604 89	5,517,721 09	14,351 22	.....	14,351 22	.....	
James L. Wilson .....	778,058 00	2,123,517 49	25,662 59	.....	25,662 59	.....	
John W. Smith.....	404,515 97	1,708,351 48	.....	.....	.....	.....	Mustered out Jan. 15, 1866.
James Mann.....	155,869 76	1,238,126 57	.....	.....	.....	.....	Resigned Dec. 8, 1865.
Asa Holt, jr.....	6,171,044 36	7,038,670 28	.....	.....	.....	.....	Mustered out Jan. 15, 1866.
John R. Cravens .....	24,712 27	626,455 76	.....	.....	.....	.....	Resigned Aug. 11, 1865.
Hiram C. Bull .....	43,867 08	43,867 08	.....	.....	.....	.....	Drowned Aug. 28, 1865.
E. W. Eddy.....	229,704 77	232,054 54	.....	.....	.....	.....	Mustered out April 15, 1866.
Silas B. A. Haynes .....	362,280 62	1,125,260 74	.....	.....	.....	.....	
C. M. Terrell.....	10,215,078 60	11,981,631 71	.....	.....	.....	.....	
Joshua H. Watts .....	504,019 02	941,311 03	28,981 74	.....	28,981 74	.....	
Edward C. Kemble .....	10,617 76	240,007 00	.....	.....	.....	.....	Mustered out April 3, 1866.
William S. Pope .....	766,023 46	1,487,641 57	.....	.....	.....	.....	Mustered out Feb. 15, 1866.
E. H. C. Hooper .....	975,713 11	1,143,358 88	.....	.....	.....	.....	Mustered out April 15, 1866.
C. J. F. Allen .....	47,216 22	727,366 20	.....	.....	.....	.....	Mustered out Nov. 15, 1865.
O. M. Dorman .....	694,667 29	1,042,832 79	.....	.....	.....	.....	Mustered out Feb. 15, 1866.
John A. Sabin.....	32,188 70	795,021 50	.....	.....	.....	.....	Mustered out May 1, 1866.
William C. Jones.....	644,397 81	1,052,589 89	.....	.....	.....	.....	Mustered out Nov. 15, 1865.
Samuel C. Staples .....	33,346 35	1,116,302 99	1,854 21	.....	1,854 21	.....	
George Pomeroy.....	850,480 58	2,250,388 65	7,776 22	.....	7,776 22	.....	
Thaddeus H. Stanton .....	2,876,254 17	3,626,129 88	92,459 57	.....	92,459 57	.....	
John M. Austin.....	221,771 93	1,489,633 80	.....	.....	.....	.....	Mustered out April 30, 1866.
Harris G. Rogers.....	285,037 04	1,585,929 44	.....	.....	.....	.....	Mustered out Mar. 31, 1866.
James B. Sheridan.....	66,064 71	1,048,101 10	.....	.....	.....	.....	Mustered out Feb. 15, 1866.
Stephen A. Walker.....	218,718 35	1,068,291 29	.....	.....	.....	.....	Mustered out Feb. 15, 1866.
George E. Glenn.....	339,644 76	834,162 97	143,317 41	.....	143,317 41	.....	
Jeremiah Fenno.....	401,448 12	1,509,830 01	.....	.....	.....	.....	Mustered out April 30, 1866.
Albert H. Hoyt.....	76,470 52	1,945,919 28	38,426 87	.....	38,426 87	.....	
Henry McFarland .....	295,826 19	1,411,705 25	.....	.....	.....	.....	Mustered out June 15, 1866.
S. R. Marston.....	34,936 64	383,370 01	.....	.....	.....	.....	Mustered out June 30, 1866.
Josiah A. Brodhead.....	153,652 37	2,046,702 57	7,757 18	.....	7,757 18	.....	
George Browne.....	1,363,544 10	2,183,525 44	.....	.....	.....	.....	Mustered out Nov. 15, 1865.
Stephen M. Crosby.....	220,800 51	778,565 04	5,662 07	.....	5,662 07	.....	Mustered out Jan. 15, 1866.
William H. Jameson.....	114 25	734,423 02	.....	.....	.....	.....	
N. W. Norcross.....	672,331 79	1,660,487 62	.....	.....	.....	.....	Mustered out April 24, 1866.
Irving T. Ballard.....	46,906 54	457,270 12	.....	.....	.....	.....	Mustered out Nov. 15, 1865.
James A. Farrish.....	135,881 09	625,775 87	.....	.....	.....	.....	Mustered out Jan. 15, 1866.
William M. Fleming.....	705,042 67	1,134,060 58	.....	.....	.....	.....	Mustered out Mar. 1, 1866.
W. W. Herrick.....	38,373 65	659,473 28	.....	.....	.....	.....	Mustered out Nov. 15, 1865.
William N. McIntire.....	659,184 69	2,036,183 00	100,000 00	.....	100,000 00	.....	Resigned, Dec. 8, 1865.



Statement showing the amount in the hands of each of the disbursing officers of the pay department, &c.—Continued.

Paymasters.	Am'ts turned over to other agents or replaced in the treasury.	Total amount accounted for.	Balances remaining unexpended and to be applied to payments in the next fiscal year.	Amount of requisitions included in balances not received by paymasters on June 30, 1866.	Actual balances in the hands of paymasters.	Remarks.
<b>VOLUNTEERS—Continued.</b>						
Nathan Thayer.....	\$85,689 86	\$1,019,120 23	.....	.....	.....	Mustered out Dec. 1, 1865.
Albert D. Robinson.....	30,647 71	485,391 36	\$3,905 44	.....	\$3,905 44	Mustered out July 31, 1865.
Jacob Herbert.....	.....	.....	.....	.....	.....	Mustered out Nov. 1, 1865.
Samuel Bell, jr.....	479,936 62	4,153,946 28	4,659 66	.....	4,659 66	Mustered out April 30, 1866.
John W. Beazell.....	1,409,297 44	2,119,041 92	.....	.....	.....	Mustered out Nov. 15, 1865.
Jesse C. Dickey.....	327,243 45	1,532,635 56	.....	.....	.....	Mustered out Nov. 15, 1865.
T. D. Greenawalt.....	37,907 15	671,227 45	.....	.....	.....	Mustered out Dec. 1, 1865.
David P. Heap.....	464,014 35	914,322 60	.....	.....	.....	Mustered out Jan. 15, 1866.
John Keatley.....	553,323 44	1,557,554 74	.....	.....	.....	Mustered out Feb. 15, 1866.
W. B. Mendenhall.....	31,903 67	1,592,094 22	.....	.....	.....	Mustered out Nov. 15, 1865.
Edwin L. Moore.....	74,848 18	1,408,576 87	71,013 64	.....	71,013 64	Mustered out April 16, 1866.
William H. Nichols.....	59,196 83	1,336,967 39	.....	.....	.....	Mustered out Feb. 15, 1866.
George J. Riché.....	91,131 31	1,419,986 94	.....	.....	.....	Mustered out Nov. 15, 1865.
John W. Walker.....	372,124 99	1,879,000 00	.....	.....	.....	Mustered out Nov. 15, 1865.
Robert C. Walker.....	276,865 37	1,375,523 85	.....	.....	.....	Mustered out April 16, 1866.
Francis B. Warner.....	194,825 47	1,261,413 12	.....	.....	.....	Mustered out Feb. 15, 1866.
Thomas J. Wilson.....	74,118 40	805,508 64	.....	.....	.....	Mustered out Nov. 15, 1865.
John M. Doddridge.....	91,939 34	1,092,091 00	18,367 63	.....	18,367 63	Mustered out Nov. 15, 1865.
William A. Rucker.....	366,289 29	1,291,763 34	.....	.....	.....	Mustered out Nov. 15, 1865.
J. W. Brigden.....	38,330 08	243,167 94	.....	.....	.....	Mustered out April 16, 1866.
O. W. Ballard.....	4,543,188 46	5,148,463 72	.....	.....	.....	Mustered out Feb. 15, 1866.
Calvin Holmes.....	138,401 77	1,091,648 00	13,732 80	.....	13,732 80	App'd paym'r May, 1866.
W. H. Hutchins.....	93,865 26	1,030,698 45	15,660 93	.....	15,660 93	Mustered out Nov. 1, 1865.
Eugene A. Osburne.....	140,180 16	856,137 84	.....	.....	.....	Mustered out April 30, 1866.
Edmund A. Truax.....	1,580,001 34	3,277,852 18	.....	.....	.....	Mustered out Nov. 1, 1865.
Isaac S. Stewart.....	263,454 84	746,452 84	.....	.....	.....	Mustered out Nov. 15, 1865.
Edwin Beecher.....	2,167,232 26	3,030,260 33	15,394 64	.....	15,394 64	Mustered out Oct. 19, 1865.
James C. Holbrook.....	48,751 49	956,770 17	3,039 12	.....	3,039 12	Mustered out Nov. 15, 1865.
Charles Newcomer.....	13,679 55	897,504 10	.....	.....	.....	Mustered out Oct. 19, 1865.

Richard H. Whiting	1, 920, 864 08	4, 034, 925 80	.....	.....	.....	Mustered out April 19, 1866.
James R. Mears	516, 339 34	2, 022, 442 49	.....	.....	.....	Mustered out Dec. 1, 1865.
Samuel E. Adams	180, 391 61	1, 002, 059 82	.....	.....	.....	Mustered out Jan. 15, 1866.
Daniel L. Eaton	65, 160 62	874, 265 08	.....	.....	.....	
W. Penn Clarke	490, 885 85	1, 530, 709 56	.....	.....	.....	Mustered out April 20, 1866.
Anson L. Brewer	78, 028 92	498, 349 18	.....	.....	.....	Drowned Feb. 2, 1866.
J. E. Burbank	1, 231, 758 62	2, 137, 713 27	.....	98, 885 94	.....	
E. Stilman Bailey	1, 185, 377 51	2, 117, 508 41	.....	.....	.....	Mustered out April 30, 1866.
T. L. Carnahan	120, 864 42	2, 663, 860 48	.....	9, 496 30	.....	
Guy K. Cleveland	23, 085 61	922, 886 79	.....	.....	.....	Mustered out Dec. 1, 1865.
John P. McGrath	291, 380 04	1, 431, 757 00	.....	1, 344 41	.....	
George W. Dyer	21, 465 05	630, 211 24	.....	2, 091 43	.....	
Edmund H. Gratiot	137, 167 55	1, 589, 921 50	.....	.....	.....	Mustered out Mar. 1, 1866.
Samuel C. Harbert	2, 957 08	446, 495 39	.....	.....	.....	Mustered out Nov. 1, 1865.
William Holloway	162, 871 74	1, 702, 443 53	.....	.....	.....	Mustered out Nov. 15, 1865.
Andrew C. Hewey	20, 384 76	80, 092 67	.....	.....	.....	Resigned Aug 12, 1865.
Wilson S. Kennon	241, 279 75	801, 630 50	.....	.....	.....	Mustered out Dec. 19, 1865.
Brantz Meyer	850, 158 35	1, 656, 388 91	.....	.....	.....	
William S. Stryker	8, 048, 798 74	9, 386, 931 97	.....	201, 807 44	.....	
G. W. Williams	250, 498 36	1, 262, 057 78	.....	91, 277 33	.....	
James W. Nicholls	24, 345 56	532, 400 71	.....	.....	.....	Mustered out Dec. 1, 1865.
George B. Ely	7, 005 36	764, 842 22	.....	5, 237 89	.....	
Jacob Sallade	46, 637 90	768, 091 86	.....	3, 268 62	.....	
William S. Lamb	6, 953 33	567, 840 70	.....	.....	.....	Mustered out Feb. 15, 1866.
Robert A. Haggarty	24, 670 30	476, 308 96	.....	.....	.....	Mustered out Nov. 15, 1865.
Anson Sperry	230, 641 41	794, 995 64	.....	.....	.....	Mustered out Nov. 1, 1865.
E. Van Valkenburg	126, 647 77	1, 264, 150 16	.....	.....	.....	Mustered out Dec. 1, 1865.
N. M. Knapp	54, 636 06	896, 746 37	.....	.....	.....	Mustered out Feb. 15, 1866.
William H. McAllister	81, 246 11	918, 170 62	.....	.....	.....	Mustered out Jan. 15, 1866.
Levi C. Ball	51, 457 44	103, 820 86	.....	.....	.....	Resigned Aug. 1, 1865
Josiah F. Price	292, 500 70	1, 307, 989 22	.....	.....	.....	Mustered out Nov. 15, 1865.
James L. Cramer	560, 997 76	1, 571, 362 91	.....	.....	.....	Mustered out Feb. 15, 1866.
Edmund Gifford	24, 008 80	108, 000 00	.....	.....	.....	Mustered out Nov. 15, 1865.
George F. Carpenter	64, 247 47	1, 050, 349 79	.....	.....	.....	Mustered out Nov. 1, 1865.
Benton McConnell	144, 047 62	473, 013 29	.....	.....	.....	Mustered out Nov. 1, 1865.
Robert Smith, (Wisconsin)	424, 949 32	443, 068 98	.....	.....	.....	Mustered out Nov. 1, 1865.
James R. Loffland	49, 032 55	2, 407, 222 14	.....	66, 652 10	.....	
Daniel M. Adams	115, 459 70	343, 597 99	.....	.....	.....	Mustered out Nov. 1, 1865.
Joseph H. Mayborn	210, 853 48	1, 395, 133 51	.....	.....	.....	Resigned Aug. 5, 1865.
John B. Lockwood	34, 151 36	34, 151 36	.....	.....	.....	Mustered out Aug. 10, 1865.
William J. Wood	18, 386 37	292, 759 31	.....	.....	.....	

Statement showing the amount in the hands of each of the disbursing officers of the pay department, &amp;c.—Continued.

Paymasters.	Am'ts turned over to other agents or replaced in the treasury.	Total amount accounted for.	Balance's remaining unexpended and to be applied to payments in the next fiscal year.	Amount of requisitions included in balances not received by paymasters on June 30, 1866.	Actual balances in hands of paymasters.	Remarks.
<b>VOLUNTEERS—Continued.</b>						
Robert G. Hunt.....	\$92, 585 02	\$1, 516, 420 60	\$2 55	.....	\$2 55	Mustered out Nov. 15, 1865.
Henry W. Scovel.....	763, 395 47	1, 956, 721 86	.....	.....	.....	Mustered out April 15, 1866.
Justus M. Phelps.....	226, 611 98	2, 085, 570 55	.....	.....	.....	Mustered out Feb. 15, 1866.
Charles L. Scholefield.....	148, 064 81	458, 069 17	36	.....	36	Mustered out Nov. 1, 1865.
Charles L. Bernay.....	119, 398 95	772, 855 91	.....	.....	.....	Mustered out Dec. 1, 1865.
William Phelps.....	468, 359 14	835, 597 93	.....	.....	.....	Mustered out July 31, 1865.
W. P. Stoms.....	363, 099 25	1, 413, 465 19	.....	.....	.....	Mustered out Dec. 1, 1865.
Walter Crane.....	356, 167 18	781, 132 48	.....	.....	.....	Mustered out Dec. 1, 1865.
Samuel M. Reynolds.....	50, 181 94	469, 289 86	14, 953 87	.....	14, 953 87	Mustered out Dec. 1, 1865.
Harlan P. Wolcott.....	113, 934 14	2, 125, 462 76	25, 902 38	.....	25, 902 38	Mustered out Mar. 31, 1866.
Jesse Bowen.....	209, 958 56	1, 672, 145 42	125, 599 62	.....	125, 599 62	Mustered out Nov. 18, 1865.
Dudley W. Rhodes.....	269, 462 55	583, 444 41	.....	.....	.....	
Wellington Vrooman.....	927, 838 00	3, 579, 760 16	118 26	.....	118 26	
Champion S. Chase.....	392, 320 53	1, 114, 120 00	.....	.....	.....	Mustered out Jan. 15, 1866.
George B. Congdon.....	363, 817 29	1, 615, 937 65	.....	.....	.....	Mustered out Oct. 13, 1865.
Josiah Tilden.....	519, 255 69	2, 015, 291 59	.....	.....	.....	Mustered out April 15, 1866.
Marshall Grover.....	363, 253 50	2, 277, 194 20	.....	.....	.....	Mustered out April 15, 1865.
N. C. Sawyer.....	143, 428 37	751, 624 58	40, 670 47	.....	40, 670 47	
Henry C. Grout.....	40, 602 94	256, 134 12	.....	.....	.....	Mustered out Nov. 1, 1865.
B. B. Hammond.....	413, 459 90	758, 879 85	.....	.....	.....	Mustered out Dec. 1, 1865.
John S. Herrick.....	228, 797 50	400, 969 62	.....	.....	.....	Mustered out Nov. 15, 1865.
William C. Lupton.....	288, 190 69	1, 469, 476 92	.....	.....	.....	Mustered out Mar. 31, 1866.
George Truesdale.....	611, 335 90	1, 362, 603 87	.....	.....	.....	
James S. Thurston.....	497, 569 27	3, 069, 184 58	10, 329 93	.....	10, 329 93	
Robert D. Clarke.....	208, 882 15	848, 236 21	.....	.....	.....	
John H. Dolman.....	1, 785, 738 18	2, 476, 723 92	.....	.....	.....	
Owen T. Turney.....	83, 352 17	1, 660, 469 41	26, 671 72	.....	26, 671 72	
Chambers Baird.....	88, 490 25	715, 765 42	.....	.....	.....	
Charles R. Littlefield.....	377, 246 23	1, 479, 203 05	.....	.....	.....	Mustered out April 30, 1866.



Statement showing the amount in the hands of each of the disbursing officers of the pay department, &c.—Continued.

Paymasters.	Am'ts turned over to other agents or replaced in the treasury.	Total amount accounted for.	Balances remaining unexpended and to be applied to payments in the next fiscal year.	Amount of requisitions included in balances not received by postmasters on June 30, 1866.	Actual balances in hands of paymasters.	Remarks.
VOLUNTEERS—Continued.						
Freeland D. Herbert.....	\$207, 283 70	\$1, 299, 309 83	.....	.....	.....	Mustered out Nov. 1, 1865.
Henry Almstedt.....	146, 172 36	893, 724 89	\$47, 660 40	.....	\$47, 660 40	Mustered out Jan. 15, 1866.
Frederick Kelly.....	205, 447 43	1, 042, 858 07	.....	.....	.....	Mustered out Nov. 1, 1865.
John M. Muscott.....	230, 231 82	230, 261 52	.....	.....	.....	Mustered out Oct. 12, 1865.
R. W. McClaughry.....	6, 579 59	571, 187 30	.....	.....	.....	Resigned July 20, 1865.
G. . McConnell.....	7, 745 17	273, 153 06	.....	.....	.....	Mustered out Oct. 23, 1865.
John S. Klein.....	15, 678 05	462, 163 22	.....	.....	.....	Mustered out Nov. 1, 1865.
Samuel Grisson.....	149, 661 01	826, 320 02	.....	.....	.....	Mustered out Feb. 15, 1866.
George W. DeCosta.....	166, 044 85	486, 933 31	.....	.....	.....	Mustered out April 30, 1866.
William R. Snyder.....	145, 995 85	1, 311, 481 78	.....	.....	.....	
Charles W. Wingard.....	271, 632 16	2, 778, 871 45	592, 600 11	.....	592, 600 11	
James H. Young.....	597, 446 61	1, 255, 811 96	19, 000 00	.....	19, 000 00	
Samuel A. Pearce, jr.....	3, 097, 940 79	4, 005, 830 55	158, 501 63	.....	158, 501 63	
Andrew H. Young.....	29, 656 41	488, 277 01	.....	.....	.....	
A. C. Varnum.....	50, 882 66	191, 214 99	.....	.....	.....	Mustered out Nov. 1, 1865.
William D. Stuart.....	84, 895 27	833, 224 84	.....	.....	.....	Mustered out Nov. 1, 1865.
William C. Woodson.....	417, 774 30	937, 336 03	.....	.....	.....	Mustered out Nov. 15, 1865.
Thomas H. Gardner.....	45, 783 18	799, 732 63	12, 800 78	.....	12, 800 78	
J. G. Salisbury.....	650, 152 58	1, 733, 706 72	84, 439 49	.....	84, 439 49	
W. B. C. Pearsons.....	50, 499 59	67, 074 34	.....	.....	.....	Mustered out Nov. 1, 1865.
Charles C. Jones.....	32, 538 55	430, 633 15	.....	.....	.....	Resigned Aug. 5, 1865.
James P. Canby.....	231, 853 89	1, 135, 073 54	75, 105 48	.....	75, 105 48	
Henry S. Goddard.....	6, 251 90	700, 756 57	.....	.....	.....	Mustered out Nov. 1, 1865.
William K. Patrick.....	1, 526, 833 18	1, 910, 428 40	1, 516 86	.....	1, 516 86	Mustered out Nov. 15, 1865.
Foster A. Hixon.....	398, 161 95	1, 568, 978 77	23, 619 15	.....	23, 619 15	
C. S. Underwood.....	599, 847 07	2, 274, 775 69	267, 871 04	.....	267, 871 04	
Israel O. Dewey.....	406, 461 52	780, 478 16	.....	.....	.....	Mustered out Dec. 1, 1865.
Joel A. Fithian.....	62, 705 40	519, 626 45	.....	.....	.....	Mustered out Oct. 12, 1865.
William T. Anson.....	56, 197 55	360, 966 53	.....	.....	.....	Mustered out Jan. 15, 1866.

Henry G. Nims .....	416, 670 80	1, 169, 667 12	85, 707 03	85, 707 03	Mustered out Jan. 15, 1866.
William H. Stewart .....	319, 849 70	1, 457, 566 18	.....	.....	Mustered out Dec. 1, 1865.
Albert McKinney .....	664, 496 83	1, 312, 337 30	.....	.....	
Joseph D. Atwell .....	157, 103 37	1, 695, 890 71	38, 342 72	38, 342 72	
Franklin Ames .....	4, 220, 667 52	5, 033, 161 00	.....	.....	Mustered out April 30, 1866.
Matthew J. McKeon .....	1, 552, 198 82	1, 552, 198 82	.....	.....	Mustered out Nov. 15, 1865.
Nathaniel A. Tucker .....	165, 189 66	843, 686 00	18, 984 15	18, 984 15	
Henry L. Williams .....	995, 257 53	2, 184, 195 58	.....	.....	Mustered out Nov. 15, 1865.
Elbert V. Carter .....	532, 163 33	1, 408, 828 89	.....	.....	Mustered out Nov. 15, 1865.
John H. Ellis .....	30, 979 38	858, 184 40	3, 814 91	3, 814 91	
Charles O. Benedict .....	16, 996 11	444, 539 96	.....	.....	Mustered out Nov. 1, 1865.
Francis M. Smith .....	158, 833 71	704, 613 84	.....	.....	Mustered out Nov. 15, 1865.
Pierie Nan Alstyne .....	1, 057, 186 37	1, 833, 285 68	.....	.....	Mustered out Dec. 1, 1865.
William Williams .....	629, 590 87	1, 631, 143 87	.....	.....	Mustered out Oct. 13, 1865.
Bradley M. Thompson .....	521, 459 83	2, 198, 231 16	.....	.....	Mustered out Dec. 1, 1865.
John J. Ladd .....	34, 475 86	42, 414 45	.....	.....	Mustered out Nov. 1, 1865.
John A. Pitzer .....	4, 773 87	520, 154 59	.....	.....	Mustered out Nov. 15, 1865.
Frank H. Fletcher .....	282, 603 49	1, 047, 363 90	.....	.....	Mustered out Mar. 31, 1866.
Philo Bundy .....	103, 285 72	358, 267 88	.....	.....	Mustered out Nov. 1, 1865.
Gilbert Wadleigh .....	336, 870 34	466, 101 40	.....	.....	Mustered out Nov. 1, 1865.
Joseph Poole .....	1, 744, 042 14	2, 375, 834 37	.....	.....	Mustered out Dec. 8, 1865.
Philip Filer .....	6, 976 08	329, 204 83	.....	.....	Mustered out Dec. 1, 1865.
George P. Sanford .....	53, 888 58	425, 062 80	.....	.....	
George B. Corkhill .....	183, 626 94	299, 330 33	.....	.....	Mustered out Aug 18, 1865.
David Gribben .....	494, 408 10	1, 490, 730 37	214, 205 05	214, 205 05	
Edward Spear, jr. ....	27, 133 41	971, 316 00	.....	.....	Mustered out Dec. 1, 1865.
Total .....	340, 834, 543 61	597, 566, 947 18	9, 294, 044 78	6, 994, 054 78	

B. W. BRICE, Paymaster.



# REPORT

## OF

# THE CHIEF OF ENGINEERS.

ENGINEER DEPARTMENT,  
*Washington, October 20, 1866.*

SIR: I have the honor to present the following report of the operations of this department for the year ending June 30, 1866.

### CORPS OF ENGINEERS.

During the year the officers of the corps of engineers have generally become available for assignment to the duties of construction on the permanent defences and upon the river and harbor improvements of the country, and in some cases to the special professional duties not directly connected with such works.

The department has thus been enabled to distribute these duties with greater advantage to the public interests, so that the more important works have the direct supervision of officers of desirable experience and practice.

At the close of the fiscal year the aggregate of the officers of the corps of engineers was ninety-five, (95,) seven (7) of whom had been transferred from the artillery and infantry arms of the service and entered the corps on the 1st of May. They were distributed as follows, viz:

On duty in the engineer department.....	5
On detached duty.....	13
With engineer battalion.....	13
At Military Academy.....	4
On harbor improvements.....	7
Unassigned and boards of engineers.....	2
Assistants to boards of engineers.....	3
In charge of engineer agency, New York.....	1
Constructing fortifications.....	41
Survey of the lakes.....	3
Leave of absence.....	3
<b>Total.....</b>	<b>95</b>

Of the thirteen officers on detached service, two were on duty with the Lighthouse Board, Treasury Department; one with Interior Department, connected with surveys for Pacific railroad, &c.; one on duty under the War Department, connected with the construction of levees on the Mississippi river; two commanding military departments; three engaged on military surveys; two on staff of General-in-Chief; one on staff of commanding general military division of the Gulf; and one unassigned.

During the year the corps has had to lament the loss of three of its oldest and most distinguished officers, viz: Brevet Brigadier General R. E. De Russay, Colonel J. D. Graham, and Lieutenant Colonel A. H. Bowman, all of whom died while in the active performance of their professional duties.

## SEA-COAST AND LAKE FRONTIER DEFENCES.

Moderate progress commensurate with the moderate appropriations of this year has been made upon the permanent defences of the lake frontier and the Atlantic sea-coast, from its eastern extremity, to include Hampton Roads; also upon the works on Amelia island, Florida, and the important forts at Key West, Tortugas, and Ship island, in the Gulf of Mexico. Injuries done to the defences of Mobile, Pensacola, and New Orleans have been repaired, or are in progress of repair, and labor on the works on the Pacific coast has been continued during the year.

Efforts have been specially directed to effecting the changes and meliorations required to enable such forts as have been completed, or have made advanced progress towards completion, to receive the guns of large calibre and improved model which are being introduced into our system, and to the preparation of additional means for storing and protecting ammunition in sufficient supply for their service. To this end two boards of engineers, organized in June, 1865, have been engaged throughout the year, as unremittingly as the other duties of the individual members would permit, in studying the problem of modifications for the several works that, one after the other, were submitted to them, and in preparing designs for such modifications as were deemed necessary.

These boards have submitted their reports and recommendations for all the works, with few exceptions, upon the Atlantic coast north of the Delaware bay, and upon the northern frontier. Upon many of these works the operations of construction are now in progress, in accordance with the modified plans, while upon others final action upon the projects and designs of the boards has been suspended in whole or part, to await the results of certain experiments in progress at Fort Monroe, having in view the use of iron shields or armor for the protection of guns and gunners. The importance of ascertaining with precision the power of modern artillery against the materials used in the construction of sea-coast forts and batteries, and of determining the efficacy of wrought-iron plates applied either as a substitute or protection for masonry scarp walls, has been fully realized, and the experiments having these objects in view have been confided to a board of engineer officers. From the progress already made, and the results already attained, it is confidently expected that a satisfactory solution of the important questions involved in these trials will be developed at an early day.

## FORTIFICATIONS.

*Fort Wayne, Detroit, Michigan, in charge of Colonel T. J. Cram, brevet brigadier general U. S. A.*—During the past year the scarp wall of the main work, with its brick coping, has been completed, except for thirty feet in extent on the north face of the east bastion, where it is brought up to reference 26 feet 7 inches, or seventeen feet seven inches above the bottom of the ditch.

The flanking casemates have all been finished excepting hanging the doors. The breast-height wall, with its revetment of four inch flag-stone, has been extended around the fort, with the exception of about three hundred running feet unfinished. The regrading, embanking, and sodding of the parapet and banquette slopes have been advanced nearly with the progress of the breast-height wall, and satisfactory progress has been made in rebuilding, re-enforcing, and fitting with new rails the permanent gun platforms of the main work.

During the present year it is contemplated to complete the breast-height wall of the main work, and the embanking and sodding of parapet and banquette slopes; to complete the demilune or water battery, including the construction therein of a new magazine; to complete the road connecting wharf, fort, and county road, and to widen and grade the ditch.

Balance in treasury October 1, 1866, \$75,000. Probable amount to be expended by June 30, 1867, \$75,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$100,000.

*Fort Porter, Black Rock, near Buffalo, New York, in charge of Captain John A. Tardy.*—This work remains in the condition reported last year.

Balance in treasury October 1, 1866, \$50,000. Probable amount to be expended by June 30, 1867, \$50,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$50,000.

*Additional works for the defence of Buffalo, New York.*—The plans for these additional defences will be considered by a board of officers as soon as they have disposed of the more urgent cases which now occupy their deliberations.

*Fort Niagara, mouth of Niagara river, New York, in charge of Captain John A. Tardy.*—Operations for replacing the old wooden scarp of land fronts with masonry were continued during the year, and by the close of the present working season this scarp will have been raised to reference 36 feet, or seventeen feet above the ditch, and the arches of flank and shoulder angle casemates turned and backed.

The land fronts could be completed during the fiscal year ending June 30, 1868.

Balance in treasury October 1, 1866, \$17,000. Probable amount to be expended by June 30, 1867, \$17,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$100,000.

*Fort Ontario, Oswego, New York, in charge of Major C. E. Blunt, brevet lieutenant colonel U. S. A.*—The work of replacing with masonry the timber revetments of this old fort (an operation commenced in 1863) has been continued during the year. The scarp has been raised on an average three feet, the average reference being now twelve feet above the top of the foundation. The masonry of the three flank casemates in right flank of bastion D, east of postern, has been completed, including service magazine and rooms adjacent, and the three sets of embrasure irons have been set. The masonry of the arched staircase leading to these casemates has also been built, and the arch and piers (in scarp) of the gateway have been constructed.

All the old wooden revetment below reference twelve feet has been removed, and the new scarp backed with earth behind a dry wall.

The total amount of masonry executed in the year is thirteen hundred cubic yards. The stone used for facing scarp, and for arches and piers, was quarried on the public land.

The operations of the next year are proposed to be similar to these, viz: raising of scarp and construction of flank casemates.

Balance in treasury October 1, 1866, \$34,000. Probable amount to be expended by June 30, 1867, \$34,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$50,000.

*Fort Montgomery, outlet of Lake Champlain, New York, in charge of Major Charles E. Blunt, brevet lieutenant colonel U. S. A., until October 1865; since then of Captain Chauncey B. Reese, brevet brigadier general U. S. A.*—At this work the principal operations of the year have been the completion of the stone and earthen parapet and breast-height wall of the land front; setting the parade wall coping, and turning floor arches; advancing the interior finish of officers' quarters; embanking the terreplein and cover-face; laying the masonry of twenty front pintle barbette platforms and drilling pintle holes; excavating the moat and constructing the revetment wall of the cover-face.

There have been applied three hundred and seventy-six cubic yards of cut stone masonry, five hundred and twelve cubic yards of dry revetment wall, three hundred cubic yards of concrete, one hundred and thirty cubic yards of brick masonry, twelve thousand three hundred and sixty cubic yards of earth

embankment in parapet, terreplein and cover-face, and thirteen thousand eight hundred and eighty superficial feet of sodding on parapet.

It is proposed during the present year to complete the stairway, bastion C, the remaining barbette platforms of the main work, and the two traverse magazines, to push the work on the sidewalks and the interior finish, of officers' quarters, to complete the coping of the main work, modify the counterscarp wall, and continue the revetment of the cover-face.

Balance in treasury October 1, 1866, \$37,000. Probable amount to be expended by June 30, 1867, \$37,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$60,000.

*Fort Knox, narrows of Penobscot river, Maine, in charge of Major Thomas Lincoln Casey, brevet colonel U. S. A.*—During the past year the three-gun battery of the southeast place of arms has been nearly completed; the covered communication with battery "B" finished; the northeast demi-bastion, howitzer casemate, and defensive gallery built; and three positions for centre pintle fifteen-inch guns in batteries "A" and "B," about made ready for their armaments.

This year it is estimated to complete the terrepleins and parapets of the north covered way; the closure of the north ditch, and the single caponniere in it, the minor details of the main work, and to finish the glacis for about twenty feet from their crests.

Balance in treasury October 1, 1866, \$22,015. Probable amount to be expended by June 30, 1867, \$22,015. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$75,000.

*Fort Popham, Kennebec river, Maine, in charge of Major Thomas Lincoln Casey, brevet colonel U. S. A.*—During the past year the scarps of the gun fronts and bastions have been brought to within about two courses of the cordon, all the gun embrasures of the second tier of fire have been completed, the second-story magazines have been finished except their linings, and five of the second-tier casemates covered with their bomb proof arches.

By the end of the present year it is expected to carry the scarps of the bastions and gun fronts to the cordon, to complete the parade walls and stairway towers of the gun fronts, to finish turning the second tier of bomb-proof arches, to construct their roof surfaces, and to cover them with mastic.

Balance in treasury October 1, 1866, \$38,900. Probable amount to be expended by June 30, 1867, \$38,900. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$75,000.

*Fort Gorges, on Hog Island ledge, Portland, Maine, in charge of Major Thomas Lincoln Casey, brevet colonel U. S. A., until the 21st of July, 1865; since then of Lieutenant Colonel George Thom, brevet colonel U. S. A.*—During the past year the operations on this fort have been applied chiefly to the modification and construction of the gorge, to the preparation of the cut stone for the stairway towers yet to be built, and to such other parts of the work as would not conflict with the proposed modifications. The gorge parade wall has been completed to its full height, and all the bomb-proof arches turned, and half of them covered with concrete. Four magazines have been completed, and two more nearly so. About one-half the quarters have been lined with bricks, and their floors concreted. Nearly all the water-pipes have been laid in the gorge, and some progress has been made towards the finishing of the quarters.

Sand concrete has been laid on one-fourth of front three, and one-half of front four, completing all in front of the breast-height wall so far as it has been built. The water-pipes connecting the vertical pipes with the parade cisterns on fronts two and four have been laid, and fourteen thousand eight hundred and fifty feet of granite have been cut, of which nine thousand five hundred and ninety feet pertain to the stairway towers yet to be built. The gun casemates and embrasures have all been completed except in some details, and are ready for their armament.

Balance in treasury October 1, 1866, \$67,190. Probable amount to be expended by June 30, 1867, \$67,190. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$125,000.

*New Fort Preble, Portland harbor, Maine, in charge of Major Thomas Lincoln Casey, brevet colonel U. S. A.*—During the past year, besides finishing the piling of the scarps, the bed of foundation of front number two, and a cistern in rear of angle five-six, little else has been accomplished than the collection and preparation of materials.

During the present year it is proposed to carry the scarps of the casemated battery to their cordon lines, to finish the rock excavation of the parade, and to build the new scarps and parapets of the old main work.

Balance in treasury October 1, 1866, \$97,900. Probable amount to be expended by June 30, 1867, \$97,900. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$150,000.

*Fort Scammel, Portland harbor, Maine, in charge of Major Thomas Lincoln Casey, brevet colonel U. S. A.*—During the past year six casemates of the second tier of fire in the east bastion have been completed, while the remaining seven platforms of this tier have been fitted with their traverse irons, ready to receive an armament.

During the present year it is proposed to complete the second tier of casemates of the east bastion, and to finish the west bastion, except putting on its parapet.

Balance in treasury October 1, 1866, \$40,200. Probable amount to be expended by June 30, 1867, \$40,200. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$150,000.

*Fort Constitution, Portsmouth harbor, New Hampshire, in charge of Lieutenant Colonel J. N. Macomb, brevet colonel U. S. A.*—The north scarp of this fort has, during the past year, been built from the reference 15 feet to 26 feet 4 inches, including the short piers adjoining the wall and eight embrasures 13-inch in the lower tier of casemates.

The east portion of the old fort has been demolished and the debris removed to the exterior by aid of a rail track constructed for that purpose.

The foundation of the northeast front of the new work has been prepared by blasting and levelling to reference 9 feet for the whole front, and the scarp and adjoining piers for half the length built to reference 13 feet.

Four main piers have been built on the southeast front, and remaining embrasure constructed, thus finishing the lower tier of embrasures.

On the south front one pier and the fifth and sixth embrasures have been built. The flagging for nine casemates extending back twenty-two feet from the scarp-wall has been laid on the south and southeast fronts.

Balance in the treasury October 1, 1866, \$142,000. Probable amount to be expended by June 30, 1867, \$92,000. Estimate of balance remaining on July 1, 1867, \$50,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$150,000.

*Fort McClary, Portsmouth harbor, Kittery Point, Maine, in charge of Lieutenant Colonel J. N. Macomb, brevet colonel U. S. A.*—During the past year one hundred and forty-seven running feet of coping were laid upon the south, southeast, and east walls of this work. The southwest wall was raised one course, from reference 35 feet 6 inches to reference 37 feet 6 inches, the caponniere at the same time being raised eight feet, from reference 29 feet 6 inches to reference 37 feet 6 inches, and the stone steps and arches constructed. The west scarp was prolonged one hundred and thirty feet weswardly, one half being raised to reference 37 feet 6 inches, the other to 35 feet 6 inches.

Behind the scarp for a length of two hundred feet and width of sixty-six feet the terreplein has been excavated by blasting, and the debris used for filling in the southeast corner of the fort.

Balance in treasury October, 1866, \$66,500. Probable amount to be expended



**June 30, 1867, \$66,500.** Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$100,000.

*Fort Warren, Boston harbor, Massachusetts, in charge of Major Charles E. Blunt, brevet lieutenant colonel U. S. A.*—This fort is nearly complete according to original plans. The work done during the past year has been principally in modifying casemate platforms to suit modern guns of large calibre; in advancing the interior finish of casemates for hospital uses, in preparing stone for main gateway, and in continuing the drainage of the work.

The appropriation made for the year ending June 30, 1867, will probably be sufficient for the completion of these various items, but extensive modifications are contemplated.

Balance in treasury October 1, 1866, \$15,500. Probable amount to be expended by June 30, 1867, \$15,500. Estimate of amount to be appropriated of the fiscal year ending June 30, 1868, \$100,000.

*Fort Winthrop and batteries, Boston harbor, Massachusetts, in charge of Lieutenant Colonel H. W. Benham, brevet brigadier general U. S. A.*—During the year work was carried on upon the south battery to the completion of the earth covering with its sodding upon the three bomb-proof magazines on the east part of the south battery, as also the sodding of the outer slopes of the east portion of this battery, also the repair of earthwork and sodding upon the bomb-proof traverse next west of the stone redoubts of this battery, and the magazine of the semicircular water battery. A small amount of masonry only having been executed, it was confined principally to the stone walls of the entrance to the second magazine traverse west of the stone redoubt of south battery; the repairing and relaying of the extremities of the drains of this battery and the east battery; the flagging of the lower floor of the stone redoubt; flagging the floor of the postern way of the tower, also of the casemate beneath this at foot of the tower stairway, and the brick floors of the four sinks of the tower. The carpenter's work was applied to the completion, or nearly so, of the officers' and soldiers' quarters of the tower, and the painting of the same has been carried on, so that they are nearly ready for occupation.

Balance in treasury October 1, 1866, \$22,000. Probable amount to be expended by June 30, 1867, \$22,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$150,000.

*Fort Independence, Boston harbor, Massachusetts, in charge of Major Charles E. Blunt, brevet lieutenant colonel U. S. A., until September, 1865; since then of Lieutenant Colonel H. W. Benham, brevet brigadier general U. S. A.*—The work at this fort during the year consisted of the resetting of the gun platforms and flagging, and cutting out and replacing the new large pintles for twenty-one barbette guns in the main work, and repairs of the breast-height wall and the earthen parapet of the northwest exterior battery. Also the construction of the bomb-proof magazine chamber of this battery, which was completed except the entrance way and the earth covering.

Balance in treasury October 1, 1866, ———. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$100,000.

*Permanent forts at Provincetown harbor, Massachusetts.*—The board of officers engaged in the study of the defences of this part of the coast will enter upon the consideration of this locality as soon as it is practicable for them to do so.

Balance in treasury October 1, 1866, \$150,000. No further appropriation asked.

*Fort at Clark's Point, New Bedford harbor, Massachusetts, in charge of Captain Henry M. Robert until the 29th of July, 1865; since then of Major George H. Mendell, brevet lieutenant colonel U. S. A.*—During the year the scarp of the water fronts has been raised to reference 38 feet 6 inches, two courses, and of the gorge to the same reference being five courses. The parade wall of the gorge has been raised to reference 43 feet 6 inches, being ten courses. Two



square stair towers have been laid to reference 43 feet 6 inches from the foundation, and one circular tower from reference 24 feet 6 inches to 34 feet 6 inches. Sixteen arches of gun casemates and three of casemates for quarters have been turned, also four ante-room arches of main magazines and ten stone fronts of arches. Pointing of the scarp and interior and concreting of the valleys of the arches have been carried on to a considerable extent. About thirty-four thousand cubic feet of excavation have been made on the exterior of the gorge, and twelve wells have been dug and one of them lined.

Balance in treasury October 1, 1866, \$104,473 35. Probable amount to be expended by June 30, 1867, \$104,473 35. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$150,000.

*Fort Phœnix, New Bedford harbor, Massachusetts, in charge of Captain Henry M. Robert until the 29th of July, 1865; since then of Major George E. Mendell, brevet lieutenant colonel U. S. A.*—The armament of this work remains unchanged. During the year the magazine ante-room has been floored and two permanent doors have been hung.

No amount on hand in treasury. No appropriation asked.

*Fort Adams, Newport harbor, Rhode Island, in charge of Captain Samuel M. Mansfield until November 9, 1865, since then of Captain D. C. Houston, brevet lieutenant colonel, U. S. A.*—Operations on the main work during the year have been limited to refacing two embrasures with brick in the lower tier west front, securing the hay crop on the slopes and in the ditches, and resodding portions of the exterior slope of the parapet on the east, southeast, and southwest fronts.

On the cover-face southwest front the work consisted in replacing the granite wall above the coping with an earthen parapet, building one traverse magazine on the water front and one on the curtain, and laying platforms for two 15-inch and two 10 inch guns.

The roof over the foundations of permanent quarters at this work has been repaired.

Balance in treasury October 1, 1866, \$104,000. No appropriation asked.

*Temporary works at western entrance to Narraganset bay, Rhode Island, in charge of Captain Samuel M. Mansfield until November 9, 1865; since then of Captain D. C. Houston, brevet lieutenant colonel U. S. A.*—At the beginning of the year the lower battery at this locality was completed, with the exception of the breast-height flagging and flagging for gun platforms, a small portion of the parapets, sodding slopes of one magazine and setting pintles and traverse irons on eleven platforms. This work has all been completed, embracing four hundred and sixty cubic yards of earth embanked in parapet, and five hundred and sixty square yards of sodding laid. The upper battery is also completed.

Balance in treasury October 1, 1866, \$95,000. No appropriation asked.

*Permanent defences at western entrance of Narraganset bay, Rhode Island.*—The purchase of land on Dutch island, negotiations for which were in progress at the date of the last annual report, has been effected, and the preparation of projects of these defences is now before a board of engineers.

The importance of providing for an adequate defence of this entrance is so paramount that an appropriation of \$100,000 for the commencement of the works has been embodied in the estimate.

Balance in treasury October 1, 1866, \$150,000. Probable amount to be expended by June 30, 1867, \$150,000. Estimate to be appropriated for the year ending June 30, 1868, \$100,000.

*Fort Trumbull, New London harbor, Connecticut, in charge of Captain S. M. Mansfield.*—Nothing has been done here beyond the care of the fort-keeper.

No balance on hand in treasury. No appropriation asked.

*Battery at Fort Griswold, Groton, Connecticut, in charge of Captain S. M. Insfield.*—This work remains as at the beginning of the year.

No balance on hand in treasury. No appropriation asked.

*Fort Hale, New Haven harbor, Connecticut, in charge of Captain S. M. Insfield.*—From the 1st of July to the 1st of December work was confined to the embankments, namely, the parapet on the entire land front and a portion of the water front, the covering mass upon long bomb-proof, and a partial rebuilding of traverses made necessary by settlement and the peculiar nature of the material of which the embankments were composed, viz., beach-washed sand. Good clayey soil was obtained about three hundred yards distant, and has furnished an excellent material for covering all the embankments. No work was done during the winter months.

The present season has been chiefly occupied in grading, sodding with fresh sod, and sowing grass seed where practicable and necessary. During the year a sluiceway has been cut through the rock at the angle of the ditch and furnished with double gates and overflow. Five granite pintle blocks have been set, one platform laid, and six embrasures cut and rivetted, and the drawbridge built; rendering the work nearly complete.

Balance in treasury, October 1, 1866, \$10,000. No appropriation asked.

*Fort Schuyler, eastern entrance to New York harbor, in charge of Mr. William P. Trowbridge, agent of engineer department, until November, 1865; then of Major Henry L. Abbot, brevet colonel U. S. A., until December 16, 1865; since then of Captain F. Harwood, brevet lieutenant colonel U. S. A.*—At this work during the past year progress has been made in the construction of service magazines in the curtain and bastions of the cover-face. The glacis, which had been much injured during the war by use as a camping ground, has been repaired and put in complete order. The paving in the sally-port of the main work has been entirely renewed; the sea-wall repaired; stone and other material provided, and temporary buildings formerly used as hospitals repaired and altered for engineer purposes.

During the present year it is proposed to continue to completion the modifications of the cover-face now in progress; to construct two traverse magazines on the curtain of the gorge, and to place two 15-inch gun platforms in the bastions, with the addition of an earthen parapet in front of them.

Balance in treasury October, 1, 1866, \$30,000. Probable amount to be expended by June 30, 1867, \$30,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$125,000.

*Fort at Willet's Point, eastern entrance to New York harbor, in charge of Major James C. Duane, brevet brigadier general U. S. A.*—At this work during the year three lines of porous drain-pipe, ten inches diameter, (with connections of six-inch porous drain-pipe,) have been laid under all the casemate floors of the first tier. The flagging for all the casemate floors, and for terreplein outside of casemates, first tier, has been laid.

All the embrasure irons for twenty-one thirteen-inch guns and two flanking guns of second tier have been put in place, and the scarp walls of northeast and northwest curtains and channel bastion, which, on the 30th of June, 1865, had been carried up to reference 25 feet 7 inches, have been completed to the following references:

Scarp wall, northwest curtain, from flank of channel bastion to the sixth embrasure, and from the eighth to the ninth embrasure, has been built to 39 feet 7 inches, and from the sixth to eighth embrasure to 42 feet. Scarp wall northeast curtain, on front from flank of channel bastion to the ninth embrasure, and on the inside to the second embrasure to 37 feet 4 inches, and from the second to tenth embrasure, inside, to 35 feet. Twelve detached piers, northeast and northwest curtains, to 29 feet. Pier No. 8 and communicating arch northwest

curtain, to 37 feet. Service magazine filling room, and tower, in channel bastion, to 29 feet.

Flagging and traverse stones have been laid on seven casemate floors of northwest curtain, and traverse stones in channel bastion and three casemate floors northeast curtain, second tier.

The drain gallery and cut-stone basin in rear of pier No. 8, northwest curtain, is finished, and the stone walls of drain gallery in rear of northwest retaining wall have been built up to their proper levels in their whole length.

During the present year it is proposed to build up the scarp walls of the northeast and northwest curtains and channel bastion to their full height; as many casemate arches as possible; all the detached piers; magazine and tower stairs in channel bastion; drain gallery in rear of northeast retaining wall, and to finish the casemate floors of second tier.

Balance in treasury October 1, 1866, \$59,025. Probable amount to be expended by June 30, 1867, \$59,025. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$100,000.

*Fort Columbus, Governor's island, New York harbor, in charge of Mr. William P. Trowbridge, agent engineer department, until the 30th of November, 1865; since then of Major Frederick E. Prime, brevet colonel U. S. A.*—The operations of the year at this work consisted in flagging the walks of the parade, repairing the pump drain, and relaying the platform around the pump. Ten hundred and seventy-two square feet of flagging were laid, and eighty-nine running feet of curb set in mortar.

Operations during the present year will be confined to the construction of a vault cellar for north barracks, relaying all the flagging in the fort, cleaning and repairing drains, and making any repairs that may be needed from time to time. No separate appropriation is asked for this work.

*Castle Williams, Governor's island, New York harbor, in charge of Mr. William P. Trowbridge, agent engineer department, until the 30th of November, 1865; since then of Major Frederick E. Prime, brevet colonel U. S. A.*—The steps of the towers at this work, which were of free-stone and very much worn, have in part been repaired by cutting out the treads and laying new ones with flagging. Two hundred and fifty-five square feet of flagging have thus been laid.

Operations for the present fiscal year will be confined to completing repairs of steps in tower, stopping leaks in mastic cover of barbette tier, and such other repairs as may be required from time to time. No separate appropriation is asked for this work.

*Sea-wall at Governor's island, New York harbor, in charge of Major Frederick E. Prime, brevet colonel U. S. A.*—Arrangements have been made for the delivery of cut-stone for fifteen hundred running feet of sea-wall at this point. The wall was commenced at the western corner of the cemetery and extended toward the south battery. One hundred and seven cubic yards of cut stone, one hundred and seventy-two cubic yards of concrete foundation, and one hundred and sixty-two cubic yards of concrete backing have been laid. Forty-seven feet nine inches of coping have been put in place, completing that length of the wall.

It is proposed to complete this sea-wall from the south battery to the sea-wall at Castle Williams, and to connect this wall with the ordnance sea-wall, and then continue the latter on a portion or all of the east front of the island.

No balance in treasury October 1, 1866. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$100,000.

*New battery near Fort Hamilton, New York harbor, in charge of Major F. E. Prime, brevet colonel U. S. A., until November, 1865; then in charge of Captain C. N. Turnbull, brevet major U. S. A., until December, 1865; then of Captain N. Bowen, brevet major U. S. A., until April, 1866; since then of Lieut.*

*Lieutenant Colonel John Newton, brevet major general U. S. A.*—The operations during the year were applied to the north and south magazines, (large,) the small traverse magazines, to setting pintle and traverse stones, traverse irons, and mortars, constructing breast-height wall, excavating foundations, removing natural surface of earth in parapet and screening, embanking parapet, grading, sodding, and sowing grass seed. Traverse magazine No. 1 has been completed, also Nos. 2 and 4 except in unimportant particulars. Nos. 3 and 5 have been suspended. The north magazine, (large,) has been completed, except copper doors, and the stone work of the south magazine, (large,) has been brought up to the springing line of the arches.

Balance in treasury October 1, 1866, \$49,135 14. Probable amount to be expended by June 30, 1867, \$49,135 14. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$80,000.

*Fort Hamilton and redoubt, New York harbor, in charge successively of Major Frederick E. Prime and Captains Turnbull and Bowen, until April, 1866; since then of Lieutenant Colonel John Newton, brevet major general U. S. A.*—Nothing has been done at this work during the year. Its condition will be considered by one of the boards of engineers now organized.

Balance in treasury October 1, 1866, \$54,000. No appropriation asked.

*Fort Lafayette, New York harbor, in charge successively of Major Prime and Captains Turnbull and Bowen, until April, 1866; since then of Lieutenant Colonel John Newton, brevet major general U. S. A.*—This old fort requires important modifications. Two boards of engineers have had this question before them, and concur in recommending a new work for this site, but no detailed plans have yet been prepared, nor is it desirable that they should be until some design for the use of iron shall have resulted from the experiments now in progress.

No separate appropriation is asked for this work.

*Fort Wadsworth, (formerly Fort Richmond,) New York harbor, in charge of Major Frederick E. Prime, brevet colonel U. S. A., until August, 1865; since then of Colonel J. G. Barnard, brevet major general U. S. A.*—During the year the granite walls of the guard-house at this work have been carried up within two courses of their full height; the floor girders (sixteen) put in position and arches turned; inside backing and filling carried up to the height of exterior walls, and ditch three-fourths excavated to proper depth and form. In these operations twenty-seven hundred and ten cubic feet of granite were set, thirty-five thousand seven hundred and fifty-six bricks laid, and thirty-five hundred and seventy-nine cubic feet of earth removed.

Balance in treasury October 1, 1866, \$20,000. No appropriation asked.

*Fort on site of Fort Tompkins, New York harbor, in charge of Major Frederick E. Prime, brevet colonel U. S. A., until August, 1865; since then of Colonel J. G. Barnard, brevet major general U. S. A.*—At this work during the year fourteen barbette platforms have been built and irons put on; sixteen granite chimney caps set, parapet and terreplein filled and sodded; barbette traverse magazine floors concreted, nine casemate floor arches turned; all casemates of the first tier, and seven of second tier, brick-lined; one hundred and sixteen casemate window sills, sixty hearthstones, and all door sills of first tier set; iron door and window and hoisting sash-frames put in position in all doors, windows, and loopholes in casemates of land fronts; all casemate floors, first and second tiers, concreted, and nine casemates floored and whitewashed and windows glazed; passage-ways to main ditch, north and south flanks, flagged, and party walls of same built; scarp wall gorge carried up two courses and backed, and parade wall one course and backed; casemate piers built; main cisterns (two) in angles of parade, and seven small cisterns under officers' quarters (gorge face) built; drains and culverts in parade and ditch completed; roof surfaces of second tier magazines repaired, and floors of those of first and second tiers asphal-



ted and repaired; 2-gun battery southeast of the work constructed and parapet formed; parade of fort excavated and cleared; filling and grading of glacis commenced; sidewalk made; drains and gutters constructed on frontage of government property west of work; slope in rear of Fort Wadsworth filled in; road running south from plane of site of Fort Tompkins formed, and parapet sodded; road running north from same plane, and connecting road running east and west, formed and macadamized.

Balance in treasury October 1, 1866, \$20,040. Probable amount to be expended by June 30, 1867, \$20,040. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$100,000.

There is now on hand in the treasury for repairs of the forts in New York harbor, (Fort Columbus, Castle Williams, South Battery, Fort Wood, and Fort Gibson,) the sum of \$67,000. Probable amount to be expended on the above-named works by June 30, 1867, \$67,000. Estimate of amount to be appropriated for the modification of the above-named works, including Fort Lafayette, for the fiscal year ending June 30, 1868, \$300,000.

*Battery Hudson, New York harbor, in charge of Major Frederick E. Prime, brevet colonel U. S. A., until August, 1865; since then of Colonel J. G. Barnard, brevet major general U. S. A.*—Operations at this work during the year have been confined to keeping slopes in repair, sodding, and jobbing.

No balance on hand in treasury. No appropriation asked.

*New casemated battery on Staten island, New York harbor, in charge of Major Frederick E. Prime, brevet colonel U. S. A., until August, 1865; since then of Colonel J. G. Barnard, brevet major general U. S. A.*—Five borings were made at this work during the year, one of one hundred and four feet and four of fifty feet each, with 6-inch tubing, to ascertain the character of the substrata of the foundations. Thirty-nine hundred and ninety-three cubic feet of ashlar were cut for foundation courses and casemate piers, and forty-nine hundred and nineteen cubic feet of stone broken for concrete.

Balance in treasury, October 1, 1866, \$280,500. No appropriations asked.

*North Cliff battery, Staten island, New York harbor, in charge of Major Frederick E. Prime, brevet colonel U. S. A., until August, 1865; since then of Colonel J. G. Barnard, brevet major general U. S. A.*—During the year seven platforms for 15-inch guns and breast-height wall in front of same have been constructed at north end of battery, and traverse irons and piniles put on; north traverse magazine built; trap and drain at north end of battery constructed; terreplein of battery embanked up to required reference, 37 feet; formation of parapet advanced; road leading up from terreplein of battery to communicate with Fort Tompkins progressed with, and adjacent slopes in rear of terreplein of battery cut.

No separate appropriation is asked for this work.

*South Cliff battery, Staten island, New York harbor, in charge of Major Frederick E. Prime, brevet colonel U. S. A., until August, 1865; since then of Colonel J. G. Barnard, brevet major general U. S. A.*—During the year the slopes in rear of the terreplein of this battery have been formed and sodded; the road leading down from terreplein of battery to rear of Fort Wadsworth made and side slope formed; the north end of battery finished; the principal magazine, south end of battery, fitted up for powder, and the new magazine in rear of terreplein excavated for, and its walls carried up to near the springing lines of the arches.

No separate appropriation is asked for this work.

*Fort at Sandy Hook, New Jersey, in charge of Major Frederick E. Prime, brevet colonel U. S. A.*—During the past fiscal year operations at this work were suspended on the scarp and casemate arches of the water fronts.

In May, 1866, operations were resumed on these parts of the work.

During the balance of this season it is intended to complete all the casemate

arches of the northeast bastion; to carry up the scarp of the north curtain, and to complete the casemate piers and communication arches of this curtain ready for the casemate arches; also to build right face of new land front to reference of parade. Next season it is contemplated to turn the casemate arches of north curtain, and prepare the piers of northwest bastion, and curtain for the casemate arches, building the scarp to its full height, and to carry up the whole of the land front to reference of parade.

Balance in treasury October 1, 1866, \$118,000 33. Probable amount to be expended by June 30, 1867, \$118,000 33. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$150,000.

*Fort Mifflin, Delaware river, Pennsylvania, in charge of Colonel Hartman Bache, until November 11, 1865; since then of Major Charles S. Stewart, brevet lieutenant colonel U. S. A.*—Alterations have been made in three platforms for 15-inch guns, and new pintles put in nine platforms for heavy guns. The greater part of the masonry of the new magazine has been built. The re-sodding of the parapet has been completed and repairs made to wharf, sluiceways, roads, &c.

During the present year it is contemplated to finish the new magazine; to put down new traverse stones and broad rails to platforms for heavy guns; to build bomb-proof traverses; to regulate terrepleins, banquettes, &c.; to repair pointing of scarp, and to clean the ditch.

Balance in treasury October 1, 1866, \$13,000. Probable amount to be expended by June 30, 1867, \$13,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$15,000.

*Fort Delaware, Delaware river, Delaware, in charge of Colonel Hartman Bache, brevet brigadier general U. S. A., until the 11th of November, 1865; since then of Major C. S. Stewart, brevet lieutenant colonel U. S. A.*—The brick piers of seven casemates of the second tier have been pointed. The interior postern gates have been hung. Platforms for projectiles for heavy guns have been made. The main sluice gates have been fitted and put in place. The dock wall has been built for a length of one hundred and ninety-five feet. The glacis has been completed, in all making about fifty-eight hundred cubic yards of earthwork. The outer embankment of the island has been repaired. The west end of the pond has been filled in with two thousand cubic yards of earth.

Balance in treasury October 1, 1866, \$46,250. No appropriation asked.

*Ten-gun battery, opposite Fort Delaware, in charge of Colonel Hartman Bache, brevet brigadier general U. S. A., until November 11, 1865; since then of Major C. S. Stewart, brevet lieutenant colonel U. S. A.*—At this work the platforms for 15-inch guns which had settled have been brought to their proper level. The counterscarp has been repaired, also the dry stone facing of portions of the scarp.

No appropriation asked, and no balance on hand in treasury.

*New fort opposite Fort Delaware.*—The study of defences for this position will be entered upon by a board of engineers as soon as the uncompleted subjects which they are non-engaged upon are disposed of.

Balance in treasury October 1, 1866, \$200,000. No appropriation asked.

*New fort near Delaware breakwater.*—This fort will likewise be the subject of study by the board referred to above, as soon as they are able to direct their attention to it, which time is now approaching.

Balance in treasury October 1, 1866, \$200,000. No appropriation asked.

*Fort McHenry, Baltimore harbor, Maryland, in charge of Captain Charles N. Turnbull, brevet major U. S. A., until the 10th of November, 1865, since then of Major William P. Craighill.*—The labor of the year at this work has been applied in continuing the re-enforcing of the pintle centres in the exterior battery; the substitution of the low for the high traverse circles, and the constructions of magazine and traverses.



At the end of the year the exterior battery was ready to receive all its 15-inch guns on centre pintle platforms, and nearly all the remaining armament on front pintle platforms, low traverse; leaving to be completed several front pintle platforms, low traverse, for 8-inch or 10-inch guns, which had been commenced.

The magazines and traverses were commenced at the opening of the season for work in 1866. They will be completed probably during the year 1866; certainly before June 30, 1867.

Balance in treasury October 1, 1866, ———. No appropriation asked.

*Fort Carroll, Baltimore harbor, Maryland, in charge of Captain Charles N. Turnbull, brevet major U. S. A., until the 10th of November, 1865; since then of Major William P. Craighill.*—Operations at this work during the year have been exceedingly limited in extent, confined in fact to keeping the fort in proper police and protecting it in its unfinished state from the weather. The settlement of the foundation on front No. 6 having practically ceased, the work of construction will be resumed at an early day.

Balance in treasury October 1, 1866, \$271,628 23. No appropriation asked.

*Obstructions of the Potomac, in charge of Major B. S. Alexander, brevet brigadier general U. S. A.*—Several methods of preparing and establishing suitable obstructions have been under consideration during the last year. With the further aid of those experienced officers who are now at liberty to direct their thoughts upon this important question, it is anticipated that satisfactory conclusions may during this year be matured and applied in practice, at least to the extent of instructive experiments.

Balance in treasury October 1, 1866, \$300,000. No appropriation asked.

*Fort Washington, Maryland, in charge of Major B. S. Alexander, brevet brigadier general U. S. A.*—The necessary meliorations for this work will come under the deliberations of a board of engineers as soon as the officers upon that duty are able to give their attention to this case.

Balance on hand October 1, 1866, \$45,000. Probable amount to be expended by June 30, 1867, \$45,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$50,000.

*Fort Monroe, Old Point Comfort, Virginia, in charge of Colonel Henry Brewerton, brevet brigadier general U. S. A.*—At this fort considerable progress was made in re-enforcing the old barbette gun platforms during the last year. The re-enforcement of platform No. 121 was completed during the year by special direction of the department, and its traverse stones and those of platform No. 118 laid one foot below the usual level. The surfaces of all the ramps of the main work have been regraded and macadamized, stone catch-waters introduced, and the gutters protected by substantial granite curbs. The passageway of the north postern (front six) has been concreted and thoroughly repaired, and a new pavement laid at the postern in front four. A number of stone chimney caps have been cut and set, and iron chimneys put in position.

In the water battery necessary alterations have been made to adapt it to a new armament of 10-inch guns. A substantial concrete pavement, able to bear the passage of heavy ordnance, has been substituted for an insufficient brick one in rear of the battery. A portion of the brick pavement of the casemates of the battery has been taken up and relaid, and the other portion repaired. Repairs have been made to the stone coping of the counterscarp wall. The sole and tonguehole of embrasure No. 11 has been renewed, and the accumulated sand against the scarp of the battery removed.

In the covered-way several front pintle platforms for 15-inch guns, with traverse stones at a low level, have been constructed, the breast-height wall being removed and reconstructed.

Three magazine ventilators in the scarp wall, closed during the rebellion, have been opened. With this exception nothing has been done to the magazines during the year.

Balance in treasury October 1, 1866, \$57,000. Probable amount to be expended by June 30, 1867, \$57,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$200,000.

*Fort Wool, formerly Fort Calhoun, Hampton Roads, Virginia, in charge of Colonel Henry Brewerton, brevet brigadier general U. S. A.*—Operations during the year at this work have been rather limited. Some progress has been made, however, with the masonry of the scarp and piers. The embrasure irons and shutters, and lead and brick concrete have been put in place in eight casemates of the second tier. The stone flagging of this tier has been laid in eight other casemates. The removal of the old masonry of the gorge has been continued. The loading in rear of the old cisterns has been removed, and the stones placed in position, as a loading, at the site of the proposed redan. The enrockment for an average width of three feet six inches immediately adjoining the scarp has been removed for a sufficient depth to uncover the old foundations of the work. Some openings were filled with mortar of cement and sand, after which the space next the scarp from which the enrockment was removed was filled repeatedly with sand and gravel, which found its way into the voids of the enrockment. The process of filling is still going on, and to include the 30th June last sixteen hundred and ninety-two cubic yards of sand and gravel were thus deposited round the foot of the scarp.

Balance in treasury October 1, 1866, \$292,074 35. No appropriation asked.

*Fort Macon, Beaufort harbor, North Carolina, and Fort Caswell, entrance to Cape Fear river, North Carolina*—These works will each require considerable modifications to enable them to receive an armament suitable for the defence of the channels upon which they are respectively located.

It is proposed to bring the question of their modification before a board of engineers as soon as it is deemed practicable to do so.

It is presumed that the alterations will comprise at least a rearrangement of the barbette tier, with the introduction of guns of heavy calibre, and suitable bomb-proof traverses for the present armament.

No balance in treasury. No appropriation asked.

*Forts Sumter, Moultrie, and Castle Pinckney, in Charleston harbor, South Carolina.*—A considerable expenditure of money will have to be made upon each of these works to place the harbor in a condition for efficient defence. Fort Sumter is a mass of ruins, and will probably have to be rebuilt from the foundation. Fort Moultrie was converted by the enemy, during the rebellion, into a powerful earthwork by banking up sand against the scarp-wall, and by the introduction of numerous traverses. Its present armament is inadequate to satisfy the conditions of a good defence, and will have to be replaced in whole or in part by good guns. The masonry of Castle Pinckney was covered during the war in a manner similar to that adopted at Fort Moultrie.

The question of the repair and modification of the permanent works, and of maintaining and preserving some of the most formidable of the earth-works in Charleston harbor, will be submitted to a board at an early day, probably during the coming winter.

Balance in treasury October 1, 1866, for Fort Sumter \$38,168 80. No additional appropriations for Fort Sumter, Fort Moultrie, and Castle Pinckney are asked.

*Fort Clinch, Amelia island, Florida, in charge of Major A. F. Sears, New York volunteer engineers, until the 26th of October, 1865; since then of Captain John W. Barlow, brevet lieutenant colonel U. S. A.*—The curtain galleries connecting the parade with the terreplein of the *chemin-de-ronde* having been constructed, and excavations for them refilled, the ramparts are ready to receive the barbette gun platforms. All, or nearly all, (forty in number) will be put in during the coming winter. The exterior parados wall, sustaining the northwest rampart, has been carried up to insure the security of the gun platforms upon

that front. The filling of the glaciis has been continued during the year, the greater bulk of it being now completed.

Balance in treasury October 1, 1866, \$36,040. Probable amount to be expended by June 30, 1867, \$36,040. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$50,000

*Fort Taylor, Key West, Florida, in charge of Captain Walter McFarland.*—The operations of the year have been chiefly confined to repairing the damages occasioned by the disastrous hurricane of October 22, 1865, which, by the destruction and derangement of the preparations of the preceding two years, has prevented much positive advancement.

The wrecks left by the hurricane have been removed; the breakwaters rebuilt and readjusted; two new breakwaters built at the northwestern extremity of the cover-face; a hundred feet of sea-wall constructed; sixty feet of sea-wall repaired and completed, and a new bridge connecting the fort with the shore, and a new workmen's barrack built.

Flagging has been laid in most of the casemates of the advanced batteries of towers one and two, and the railroad has been cleared of the rubbish left upon it by the storm.

Balance in treasury October 1, 1866, \$219,908. Probable amount to be expended by June 30, 1867, \$169,908. Estimate of balance remaining on July 1, 1867, \$50,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$150,000.

*Fort Jefferson, Garden Key, Tortugas, Florida, in charge of Captain Walter McFarland.*—During the year the masonry of the officers' quarters, kitchens, and soldiers' barracks, seriously injured by the hurricane of October, 1865, has been repaired and completed. The walls of a large detached magazine have been raised thirteen and a half feet, and its principal arch turned, and the walls of a small detached magazine raised seven feet. Eighty thousand cubic feet of sand have been removed from the ditch and embanked, and the counterscarp wall constructed in front of curtain three, for a distance of one hundred feet.

Balance in treasury October 1, 1866, \$50,000. Probable amount to be expended by June 30, 1867, \$50,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$200,000.

*New fort at Tortugas, Florida.*—The attention of the boards of engineers in session during the year has been required by the consideration of works in progress of construction, but it is hoped that the plans for this work may now soon be taken up by one of them.

Balance in treasury October 1, 1866, \$214,000. No additional appropriation asked.

*Fort Pickens, Pensacola harbor, Florida, in charge of Captain J. C. Palfrey, brevet lieutenant colonel U. S. A., until January, 1866; then of Captain William E. Merrill, brevet colonel U. S. A., until March, 1866; since then of Captain Miles D. McAlester, brevet lieutenant colonel U. S. A.*—The general condition of this work is good. The magazines and gun platforms (excepting two barbette front pintle and twenty-three casemate, all of which are without traverse rails) are in good condition. During the year, one front pintle barbette gun platform for modern armament, and one platform for projectiles, have been constructed, and repairs and modifications of the parapet of the west bastion have been made.

It is contemplated to construct at this work during the year ending June 30, 1867, several barbette platforms. No balance in treasury October 1, 1866. No appropriation asked.

*Fort Barrancas and redoubt, including the old Spanish fort, Pensacola harbor, Florida, in charge of Captain J. C. Palfrey, brevet lieutenant colonel U. S. A., until January, 1866; then of Captain William E. Merrill, brevet colonel U. S. A., until March, 1866; since then of Captain Miles D. McAlester, brevet*

*lieutenant colonel U. S. A.*—The general condition of this work is good, with the exception of the cracks which have long existed in the scarp of the fort and its redoubt. The magazines and gun-platforms are in serviceable order, except three front pintle barbette platforms, small calibre not yet re-enforced in the fort, and eleven in the old Spanish fort.

No balance in treasury October 1, 1866. No appropriation asked.

*Fort Morgan, eastern entrance to Mobile bay, Alabama, in charge of Captain J. C. Palfrey, brevet lieutenant colonel U. S. A., until January, 1866; then of Captain William E. Merrill, brevet colonel U. S. A., until March, 1866; since then of Captain Miles D. McAlester, brevet lieutenant colonel U. S. A.*—With the exceptions of the defensive barrack in the parade, which was reduced to ruins by the bombardment of August, 1864, and the shot-holes in the masonry of the fortification itself, which were produced by the same cause, the general condition of this fort is good. All the magazines and gun platforms, excepting some of the latter not yet re-enforced, are in serviceable condition.

By the 30th of June, 1866, all the shot-holes in the counter-scarp had been repaired, and several in the scarp made ready for the reception of the new masonry.

The operations contemplated for the present year are the completion of the repairs of the shot-holes above noticed, and the modifications of fourteen casemate platforms necessary to adapt them to the service of 10-inch Rodman guns.

No balance in treasury. No appropriation asked.

*Fort Gaines, entrance to Mobile bay, Alabama, in charge of Captain J. C. Palfrey, brevet lieutenant colonel U. S. A., until January, 1866; then of Captain William E. Merrill, brevet colonel U. S. A., until March, 1866; since then of Captain Miles D. McAlester, brevet lieutenant colonel U. S. A.*—The general condition of this work is the same as on June 30, 1865. The magazines and platforms (excepting two centre pintle barbette and four front pintle barbette for small calibres, not yet re-enforced) are in a serviceable condition.

No balance in treasury. No appropriation asked.

*Fort on Ship island, coast of Mississippi, in charge of Captain J. C. Palfrey, brevet lieutenant colonel U. S. A., until September, 1865, then of Captain John M. Wilson, brevet major U. S. A., until December, 1865; since then of Captain Miles D. McAlester, brevet lieutenant colonel U. S. A.*—The general condition of this fort is good. The magazines are all in readiness for use. The gun platforms (excepting five or six for smaller calibres in barbette, to which rails have not yet been applied) are ready for guns.

Active work commenced early in July, with turning the arches supporting the parados. By September the breast-height wall, the culvert arches under the terreplein, and the mastic covering of the roof surfaces of the casemate arches were finished. In October the arches supporting the parados, and the scarp coping, were completed. In November the concrete masonry of the parapet and of the foundations of five barbette platforms for smaller calibres was finished. In March three hundred and seventy feet of parade coping, one barbette platform for 15-inch gun, foundations of five barbette platforms for smaller calibres, the service magazines, the stair towers, and the revetment walls of the parados and traverses were finished. By April all the gun platforms were completed, with the exception of setting the rails and pintles of those on barbette. By July all culvert arches were finished, all mastic coverings completed, the terreplein graded, and bricks, shells, and sand everywhere applied in sufficient thickness to protect the mastic coverings from injury by the weather.

The operations contemplated for the year ending June 30, 1867, will complete the fort as far as at present designed. By the 30th September it will be ready for the reception and service of its entire armament.

No balance in treasury. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$75,000.



*Fort Jackson, Mississippi river, Louisiana, in charge of Captain J. C. Palfrey, brevet lieutenant colonel U. S. A., until September, 1865; then of Captain John M. Wilson, brevet major U. S. A., until December, 1865; since then of Captain Miles D. McAlester, brevet lieutenant colonel U. S. A.*—This work is in good general condition. The gun platforms (excepting twenty out of repair) and the magazines, as far as completed, are in good order.

In January the engineer quarters were repaired for the reception of the employés to be accumulated for operations here and at Fort St. Philip. In May the re-enforcing of barbette platforms to adapt them to larger calibres was commenced. By the 30th of June considerable progress had been made with the work on about half these platforms. During the present year it is contemplated to complete these platforms and the necessary modifications of the terrepleins, recesses, and parapets connected with them, and to complete, also, the modifications of the casemate platforms to adapt them to the service of ten-inch Rodman guns.

Amount on hand in treasury October 1, 1866, \$9,000. No additional appropriation asked. •

*Fort St. Philip, Mississippi river, Louisiana, in charge of Captain J. C. Palfrey, brevet lieutenant colonel U. S. A., until September, 1865; then of Captain John M. Wilson, brevet major U. S. A., until December, 1865; since then of Captain Miles D. McAlester, brevet lieutenant colonel U. S. A.*—The general condition of this work is good. The gun platforms, with the exception of some out of repair, and the magazines, as far as completed, are in good order.

In January the re-enforcing of the barbette platforms to adapt them to heavier guns was commenced. By the 30th of June this was completed, with the exception of the covering stones in contact with the pintle blocks and the middle retaining post of each platform, these not having arrived from the quarries. During this time, also, the work of replacing with masonry and earth the temporary timber covering of the magazine in the lower battery, and renewing the wooden lining, and elevating the floor of this magazine, was well advanced.

During the present year it is contemplated to complete the platforms above noticed, make the necessary modifications of the terrepleins, recesses, and parapets connected with them, and finish the magazine.

Balance in treasury October 1, 1866, \$32,555. No additional appropriation asked.

*Forts commanding the lateral approaches to New Orleans, viz: Fort Livingston, fort at Proctorville, Tower Dupré, Battery Bienvenue, Fort Macomb, and Fort Pike, in charge, successively, of Captains Palfrey and Merrill, until March, 1866; since then of Captain Miles D. McAlester, brevet lieutenant colonel U. S. A.*—These works are in the same general condition as on June 30, 1865. The two bridges across the ditches of Fort Macomb require repairs.

No balance in treasury, no appropriation asked.

No appropriations are asked for the fortifications in North Carolina, South Carolina, or Georgia, or for those located on the mainland in the Gulf States. Any repairs that may be necessary upon these works, until such time as the subject of their modification shall have received the action of a board of engineers and of the War Department, can be made from funds now at the disposal of this department.

*Fort at Fort Point, entrance of San Francisco harbor, California, in charge of Colonel René E. De Russy, brevet brigadier general U. S. A., until November, 1865; since then of Captain George H. Elliot.*—But little has been done at this fort during the year. The iron work of the embrasures has been scraped and painted, the main drain from the fort into the sea has been taken up and repaired, and some progress made on the sea-wall, intended to serve as a protection to the site of the fort and a foundation for additional water batteries.

Balance in treasury October 1, 1866, \$290,000. Probable amount to be ex-

pended by June 30, 1867, \$240,000. Estimate of balance remaining on 1st of July, 1867, \$50,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$100,000.

*Fort at Lime Point, opposite Fort Point, San Francisco harbor, California.*—Since the close of the last fiscal year the title of the land at Lime Point has been approved by the Attorney General, and its purchase by the United States perfected. The new work will be commenced at an early day.

Amount on hand in treasury October 1, 1866, \$75,000. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$150,000.

*Fort at Alcatraz island, San Francisco harbor, California, in charge of Captain George H. Elliot.*—During the past year considerable progress has been made at this work in the construction of a new bomb-proof barrack, designed to furnish quarters for the garrison and storage-room for the military supplies of the place, and to increase also the fire of the island. Steps have been taken toward an extension of the battery at the northwest end of the island. A new ramp from the guard-house to the summit of the island has been constructed, a new wharf built, and new fender piles for main wharf driven; a number of old platforms removed to give place to new ones, and close shutters of iron fitted to the ventilators of all the magazines. The iron-work of parapets and platforms has been kept in good order by frequent painting during the year, and the earthen parapets—damaged by high winds and want of rain—have been renewed and kept in repair.

During the present year it is contemplated to finish the new bomb-proof barrack and the extension of northwest battery; to substitute several new guns and platforms for old ones; construct some of the traverses, and carry on the sloping of the rock in rear of the batteries and the placing of six feet of earth thereon.

Balance in treasury October 1, 1866, \$66,282 54. Probable amount to be expended by June 30, 1867, \$66,282 54. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$200,000.

*Battery at Point San José, near the city of San Francisco.*—A plan for the extension and modification of this battery was submitted by the superintending engineer during the year, but it was not deemed desirable by the department at that time to increase the armament or expend money at that point, except in the execution of some plan for a permanent work, after a design shall have been submitted by a board of engineers, this being one of the points on the interior line owned by the United States and designated for permanent occupation. No appropriation on hand for the fiscal year ending June 30, 1867. Estimate of amount to be appropriated for the fiscal year ending June 30, 1868, \$50,000.

*Point Lobos.*—A topographical survey for military purposes was commenced near this point, and good progress is being made there with three surveying parties. No balance in treasury, no appropriation asked.

*Defences in Oregon and Washington Territory, at or near the mouth of the Columbia river, in charge of Colonel René E. De Russy, brevet brigadier general U. S. A., until November, 1865; since then of Captain George H. Elliot.*—On these defences there has been no work in progress during the year.

Balance in treasury October 1, 1866, \$60,000. An appropriation is asked below under the head of new works to be commenced.

#### NEW WORKS TO BE COMMENCED.

There exists a necessity, in consequence of the increased range and power of modern artillery, and which has been recognized and expressed by boards of engineers composed of officers of ability and experience, for commencing, without delay, the construction of several new fortifications on the Atlantic coast. On the Pacific coast no permanent works exist, or have been commenced, north of San



Francisco harbor, but are required at the mouth of Columbia river and the waters of Admiralty inlet.

It has been impossible, up to the present time, in view of the other duties confided to the corps of engineers, to have detailed plans and estimates of the contemplated new works prepared.

The several amounts asked in the estimate are given below, and are calculated to provide for a vigorous prosecution of the work of construction for one year. For commencement of two additional forts for defence of Portland harbor,

Maine .....	\$150, 000
For commencement of an additional fort for defence of Portsmouth harbor, New Hampshire.....	75, 000
For commencement of an additional fort for defence of Boston harbor, Massachusetts .....	75, 000
For commencement of two forts for the defence of Narraganset bay. Rhode Island.....	100, 000
For commencement of a fort at Point San José, at San Francisco harbor, California.....	50, 000
For commencement of permanent defences at the mouth of Columbia river and at Admiralty inlet.....	400, 000

#### MILITARY ACADEMY.

*June 30, 1866* —During the past year forty cadets completed their studies and military exercises at the academy, and were commissioned as lieutenants in the army.

The number of graduates has, for a long period, been insufficient to fill the annual vacancies in the army.

No cadet appointments have been made this year to fill vacancies in those congressional districts which are without congressional representation.

In most respects the academy remains the same as at the period of the last annual report.

At the annual examination in June, the corps of cadets numbered two hundred and twenty-eight members.

No report of the Board of Visitors present at that examination has been received by this department.

#### ENGINEER BATTALION.

*Engineer battalion, commanded by Captain F. Harwood, brevet lieutenant colonel United States army, until November, 1865; since then by Major Henry L. Abbot, brevet brigadier general United States army.*—During the year the filling up of the five companies of engineer troops, comprising the engineer battalion, to the authorized strength of one hundred and fifty enlisted men each, has steadily progressed. The comparatively high grade of qualifications for engineer soldiers, which it has been deemed necessary to establish and maintain, has rendered recruiting less rapid for this arm of the military service than for any other. The condition of the battalion, with regard to discipline and instruction, is satisfactory.

On the 30th of June, 1866, the number of recruits required was one hundred and fifty-one. The troops were distributed as follows, viz: one company at the Military Academy, to assist in giving instruction in practical military engineering to the corps of cadets; three companies at the engineer depot at Willet's Point, New York, and one company at the engineer depot at Jefferson barracks, Missouri.

#### ENGINEER DEPOTS.

At these two depots, above mentioned, the duty of collecting, storing, and preserving engineer war material of value, which remained on hand in the field

or at supply depots at the close of the active operations of the late war, has approached completion. The material of too little value to justify transportation was, as a rule, sold on the spot. It is the intention of the department to keep on hand at each of these depots a complete outfit, on a moderate scale, of such engineer, bridge and siege equipage as would be most likely to come into requisition to supply unforeseen demands in the field.

The barracks and quarters for the accommodation of the engineer troops at these depots are in a wretched and dilapidated condition, and there are no funds at the control of the department for their reconstruction or repair. The estimate includes a moderate sum to be devoted to these objects, as follows :

- For barracks and quarters at Willet's Point, \$25,000.
- For barracks and quarters at Jefferson barracks, Missouri, \$20,000.

SURVEYS, MAPS, AND TOPOGRAPHY.

The labor performed in the department in this branch of its duties has resulted for the year as follows, viz :

Engraving and printing maps, plans, diagrams, &c.....	31, 425 sheets.
Photographic maps, plans, &c.....	2, 505 "
Engraving and printing charts of lake survey.....	2, 916 "
	<hr/>
Making a total of.....	36, 846 "
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All of which were prepared with a view to distribution among the officers of the corps and other branches of the service, except the lake charts, which were distributed only to navigators and persons directly interested in the commerce of the lakes.

SURVEY OF THE NORTHERN AND NORTHWESTERN LAKES.

This important work has progressed very satisfactorily under the charge of Brevet Colonel W. F. Raynolds, major of engineers. The parties were promptly in the field at the opening of navigation, and when heard from were diligently prosecuting the various duties intrusted to them.

The following summary will furnish an idea of the amount, as well as exhibit the minute and accurate character of the work which has been performed :

*Summary.*—Two steamers for shore parties, and an astronomical party, divided into two sections, were employed in the field during the season of 1865.

One steamer and two shore parties were stationed in Green bay, and one steamer and three shore parties in Lake Superior.

The astronomical party was stationed in both fields of operation, and made the connection between Green bay and Lake Superior by transmission of telegraphic signals for difference of longitude, and observed at six points in Green bay and two in Lake Superior for latitude.

The survey of Green bay, throughout its entire extent, has been finished, and the primary triangulation connected with that in the north end of Lake Michigan and the straits of Mackinac.

The details of the work in Green bay for the season of 1865 are as follows :

Number of primary triangulation stations built.....	15
Number of water stations placed in dangerous shoals.....	3
Number of sounding stations built....	511
Number of buoys placed and located.....	536
Number of angles measured for primary triangulation.....	143
Number of angles measured for secondary triangulation.....	80
Number of sextant angles.....	887
Number of theodolite pointings.....	17, 266
Number of compass readings for magnetic declination.....	34

Number of lines sounded with steamer.....	128
Number of lines sounded with small boats.....	3, 602
Number of miles sounded with steamer.....	906
Number of miles sounded with small boats.....	2, 885½
Number of casts of lead from steamer.....	2, 058
Number of casts of lead from small boats.....	166, 995
Number of square miles of hydrography off-shore.....	444
Number of square miles of hydrography in-shore.....	184
Number of miles run with stadia for topography.....	134
Number of square miles of topography.....	74½
Number of miles of shore-line run.....	190½
Number of miles run by steamer on general duty.....	2, 492

The above work was plotted during the winter on 14½ sheets of antiquarian paper, two of which were on a scale of one sixty-thousandth, and the remainder on a scale of one sixteen-thousandth, embracing 3,590 square inches of minute hydrography, and 949 square inches of minute topography.

In Lake Superior the shore-line was surveyed from Ontonagon to the Methodist mission in l'Anse bay. The off-shore sounding around Keweenaw Point and Manitou island was completed, and the topography of a large portion of Keweenaw Point minutely surveyed.

The details of the work in Lake Superior last season are as follows, viz:

Number of primary triangulation stations built.....	19
Number of secondary triangulation stations built.....	105
Number of water stations built.....	1
Number of sounding stations built.....	373
Number of buoys placed out and located.....	369
Number of angles measured for primary triangulation.....	46
Number of sextant angles.....	693
Number of theodolite pointings.....	15, 454
Number of vertical angles for topography.....	4, 280
Number of compass angles for magnetic declination.....	685
Number of lines sounded with steamer.....	63
Number of lines sounded with small boats.....	933
Number of miles sounded with steamer.....	680
Number of miles sounded with small boats.....	2, 394½
Number of casts of lead from steamer.....	446
Number of casts of lead from small boats.....	96, 693
Number of square miles of hydrography off-shore.....	756
Number of square miles of hydrography in-shore.....	115 <sup>3</sup> / <sub>10</sub>
Number of miles run with stadia for topography.....	387 <sup>9</sup> / <sub>10</sub>
Number of square miles of topography.....	307½
Number of miles of shore-line run.....	151
Number of miles of shore-line run in inland lakes.....	38
Number of miles of lines of sight cut.....	42½
Number of miles of lines cut in locating base line.....	21
Number of miles levelled in locating base line.....	11½
Number of heights measured by barometer.....	5
Number of miles run by steamer on general duty.....	5, 444

The above work was plotted during the winter on twelve sheets of antiquarian paper, one of which was on a scale of one one-hundred-and-seventy-thousandth; of the remainder, one was on a scale of one thirty-two thousandth, and ten on a scale of one sixteen-thousandth; the whole embracing 1,323 square inches of topography, 1,764 inches of minute hydrography, and 87 square inches of off-shore hydrography.

The total amount of work accomplished during the season was as follows:

Number of primary triangulation stations.....	34
Number of secondary triangulation stations.....	105
Number of water stations.....	4
Number of sounding stations.....	884
Number of buoys placed and located.....	905
Number of angles measured for primary triangulation.....	189
Number of angles measured for secondary triangulation.....	80
Number of sextant angles.....	1, 580
Number of theodolite pointings.....	32, 720
Number of vertical angles for topography.....	4, 280
Number of compass angles for magnetic declination.....	719
Number of lines sounded with steamers.....	191
Number of lines sounded with small boats.....	4, 535
Number of miles sounded with steamers.....	1, 586
Number of miles sounded with small boats.....	5, 278
Number of casts of lead from steamers.....	2, 504
Number of casts of lead from small boats.....	263, 688
Number of square miles of hydrography off-shore.....	1, 200
Number of square miles of hydrography in-shore.....	299 <sup>3</sup> / <sub>10</sub>
Number of miles run with stadia for topography.....	521 <sup>5</sup> / <sub>8</sub>
Number of square miles of topography.....	331 <sup>7</sup> / <sub>8</sub>
Number of miles of shore-line run.....	201
Number of miles of shore-line of inland lakes run.....	38
Number of miles cut in locating base line.....	21
Number of miles levelled in locating base line.....	11 <sup>1</sup> / <sub>2</sub>
Number of heights obtained by barometer.....	5
Number of miles run by steamer on general duty.....	7, 936
Number of miles of lines of sight cut.....	42 <sup>1</sup> / <sub>4</sub>

Which work has been plotted on 22<sup>1</sup>/<sub>2</sub> sheets of antiquarian paper on a scale of one sixteen-thousandth; on one sheet on a scale of one thirty-two-thousandth; two sheets on a scale of one sixty thousandth, and one sheet on a scale of one one-hundred-and-seventy thousandth; the whole embracing 5,441 square inches of hydrography, and 3,272 square inches of topography.

Special surveys were made of eleven harbors in Lakes Erie and Michigan, maps of which were made showing the details of piers, &c., and furnished to engineers in charge of harbor improvements.

During the present season two steamers and two shore-packets have been at work in Lake Superior. Their field of operations was confined to that portion of the lake between Manitou island and Marquette.

Astronomical and trigonometrical parties have been stationed on the north shore, Isle Royale, and Keweenaw Point, and a connection made across the lake.

One steamer and two shore parties have been engaged in Lake Michigan, and it is hoped to carry the surveys in that lake as far south as Little Point au Sable on the eastern, and the vicinity of Manitowoc on the western side.

Twenty-eight charts of lakes have already been published.

Three charts are now in the hands of the engraver.

Two charts are now being reduced for publication.

Copies of the lake survey charts have been distributed, of which 2,916 were distributed during the past year.

Total estimates for the year ending June 30, 1868, \$153,166 75. (See Appendix.)

Brevet Lieutenant Colonel R. S. Williamson, major of engineers, has continued his surveys and explorations in California and Oregon. No report has as yet

been received from him in consequence of his absence from his post on field duty; but his work has been vigorously prosecuted, and the result will doubtless prove very interesting and important to the interests of the government, as well as to the particular region embraced in his operations.

Brevet Brigadier General N. Michler, major of engineers, reports his operations as follows: As stated at the close of my last annual report, I was detached on the 14th of April from the staff of the commanding general of the army of the Potomac, and directed, in conformity with instructions from General Grant, to proceed to Petersburg, Virginia, in order to examine and direct military surveys of the respective intrenched positions held by the two opposing armies during the siege, and prepare plans of the same, combined with a detailed and accurate topographical map of the adjacent country; also to assume charge of the surveys of the different "battle-fields and lines of operations from the James river to Appomattox Court House." By the middle of the following October, 1865, the field-work had been completed, and in compliance with instructions, dated headquarters armies of the United States, Washington city, D. C., September 2, 1865, I left Petersburg, Virginia, for this city, (Washington,) and established an office for the purpose of preparing the necessary plans and maps of the surveys. The latter cover an area of one thousand one hundred and twenty square miles; of these some four hundred and twenty-five were surveyed in great detail, the different sections of the latter being connected by odometer surveys extending over one hundred and thirty miles of roads. The maps comprising these surveys, and which embrace the siege operations and engagements in the immediate front of Petersburg, as well as the battle-fields of Five Forks, Sailors' Creek, High Bridge, and Farmville, are drawn on twenty-three sheets of antiquarian paper, and consist of the following: eight on a scale of eight inches to the mile, twelve on a scale of two inches to the mile, and three on a scale of four inches to the mile; in addition to these, there are sixty-six drawings of forts, redoubts, batteries, and mines, the scale of the respective plans being forty feet to one inch.

On the 17th of February, 1866, by authority of General Grant, Brevet Brigadier General P. S. Michil, captain United States engineers, turned over all maps, plans of batteries, notes, &c., belonging to the survey of the rebel defences about Richmond, and I was charged with their completion. The area surveyed in detail measures about three hundred square miles, the drawings of maps consisting of twenty-one sheets on a scale of eight inches to the mile, and one sheet on a scale of two inches to the mile; these cover not only the operations of the army of the James against the intrenched lines around Richmond in 1864-'65, but also those of the previous movements in 1862 of the army of the Potomac before that city, showing the battle-fields of Fair Oaks and Seven Pines, and the seven days' battle of Mechanicsville, Gaines's Mill, Allen's Farm, Savage Station, White Oak Swamp, Glendale, and Malvern Hill. In addition, there are forty-five sheets of forts and batteries, the scale of the plans being forty feet to the inch.

Several maps of the battle-fields between the Rapidan and the James river, and not enumerated in the above statement, are also being prepared under my direction; they consist of those of the Wilderness, Spottsylvania, North Anna, Tolopotomy, and Cold Harbor. The maps and plans above referred to were, at the close of the last fiscal year, either completed, or in course of construction. A general map on a scale of  $\frac{1}{250000}$  is also being compiled from the above surveys, and from the latest information that can be procured from the most reliable authorities, exhibiting the whole extent of country to the east of the Alleghanies between the Potomac river on the north and the South Side railroad on the south, embracing the various movements of the several armies operating in that section during the war. The entire series of maps, together with the plans of forts, batteries, and mines, number one hundred and sixty-two sheets.



## PRESERVATION AND REPAIR OF ATLANTIC HARBORS AND SEA-WALLS.

The appropriation of \$100,000 for the preservation and repair of harbors on the Atlantic coast was distributed as follows, viz :

Susquehanna river, near Havre de Grace, and Patapsco river, near Baltimore, Maryland, jointly .....	\$20, 000
Hudson river, New York .....	35, 000
Plymouth beach, Massachusetts .....	8, 315
Provincetown harbor, Massachusetts .....	30, 000
General contingencies .....	6, 685
Total .....	<u>100, 000</u>

Which sums were expended, or in course of expenditure, as will be seen from the reports of the officers in charge, following :

## IMPROVEMENT OF THE NAVIGATION OF THE PATAPSCO RIVER, BELOW FORT MCHENRY, AND OF THE SUSQUEHANNA RIVER, AT HAVRE DE GRACE.

Major Craighill, the officer in charge, reports : "These works were under the supervision of Colonel J. D. Graham, corps of engineers, until his death, which occurred on the 28th of December, 1865. By engineer department letter of March 20, 1866, the charge was transferred to me.

"Nothing was done by Colonel Graham for want of machinery. In his last annual report, he enumerated the following machinery as belonging to these works, viz: one steam-tug, the Robert Leslie; four steam-dredges, the Chesapeake, Potomac, Patapsco, and Susquehanna, and sixteen dumping scows. Of these vessels, the tug the Chesapeake and seven scows were in the possession of the engineer department when the charge of the works was committed to me, the remaining vessels being held by other departments of the government, or the authorities of the city of Baltimore, to whom they had been loaned by the War Department. The Patapsco and two scows were returned in May by the Navy Department, and two scows by the authorities of Baltimore. Extensive repairs were requisite for all the vessels in hand, which were made upon the tug, the two dredges, and eight scows.

"No specific appropriations for the year ending June 30, 1866, were made for these works by Congress, but \$20,000 from the general fund for 'harbors on the sea-board,' was allotted to them by the engineer department. About \$10,000 was expended in the necessary repairs and fitting out of machinery, which amount is considered equally chargeable to the two improvements. For the year ending June 30, 1867, Congress, following estimates submitted by Colonel Graham, appropriated for the Patapsco river \$5,200, and for the Susquehanna river, at Havre de Grace, \$26,400.

"It is proposed, during the working season of 1866, to expend upon the Patapsco river the remainder of the sum allotted by the engineer department and the \$5,200 just mentioned, and during the working season of 1867 to expend at Havre de Grace the sum of \$26,400, using the same machinery at both places."

## PATAPSCO RIVER.

A preliminary examination of the Brewerton channel, in the Patapsco, below Fort Carroll, made during the first suitable weather in May, showed that since the last dredging, reported by Colonel Graham to have been done in 1859, a partial filling up of the channel had taken place, chiefly below North Point, and to be attributed, it is supposed, to the current of the Susquehanna river. The channel was carefully buoyed out, points being established and temporary signals erected for the season on Hawkins's Point for fixing the line of the chan-



nel and keeping the buoys and dredges in proper place, whilst facilitating greatly the use of the channel by vessels. The attention of the Light-house Board having been called to the matter, that department obtained from Congress an appropriation of \$30,000 for the establishment of permanent beacons for this channel.

The dredge Chesapeake was set to work in June, 1866, in this channel, below North Point, with the expectation of her continuing there during the working season of 1866, to be joined by the dredge Patapsco upon the receipt of her dipper from the Navy Department.

The tug Leslie tows off the scows as they are filled, and the dredge material is deposited on the flats near by, out of any current which could carry it to places where it would be injurious. It is intended to apply the available funds, so far as they will go, to deepening the channel to about twenty-one feet at mean low water.

The latest surveys of the Patapsco river and its approaches were made previously to the cessation (in 1859) of work in excavating the Brewerton channel. The matter excavated from this channel was deposited at various points in the lower part of the harbor. Moreover, the city and State authorities have been working dredges in the basin and upper part of the harbor, and depositing the excavated matter at various places thereabout. Considering these facts and the erection of Fort Carroll, a very large mass on the verge of the channel in the rather narrow opening between Hawkins's and Sollers's Points, it is certain that extensive changes must have taken place in the last ten or fifteen years in the depth of the Patapsco river, below the city of Baltimore.

An examination of the latest map of the debouche of the river around the Bodkin, indicates, it seems, that instead of continuing the deepening of the Brewerton channel in a straight line to the entrance buoy, where it strikes deep water, it might be better to turn the channel to the southward, causing it to pass just to the east of the Seven Feet Knoll light. It is stated upon good authority that the southerly channel is usually much less obstructed by ice in winter, and it is the actual channel used at all times by all except the largest vessels entering this port. There is a gain of distance in its use. Experience has shown that the lower portion of the Brewerton channel is affected injuriously by the current of the Susquehanna sweeping across it. The new direction would, on the contrary, probably be benefited, if affected at all, by this current. It is thought very desirable that a careful resurvey of the Patapsco river should be made before there is any further large expenditure of money on the portion of the Brewerton channel below a point opposite the Seven Feet Knoll light—the survey to embrace the whole of the river below the city of Baltimore, with its approaches from the bay. This survey could best be made by the officers of the United States Coast Survey.

*Estimates.*—Estimates are submitted herewith, based upon the latest information now at hand, viz., the Coast Survey charts, and the results obtained from the examination of the line of the Brewerton channel made in May last. The estimates are for channels 22 feet in depth and 150 and 200 feet in width. A new survey would modify these estimates, but whether by increasing or diminishing them none can say in advance.

*Channel one hundred and fifty feet wide and twenty-two feet deep at mean low water.*

From Fort McHenry to angle buoy below Hawkins's Point, 205,000 cubic yards.....	\$61, 500
From angle buoy to entrance buoy at mouth of river, 438,500 cubic yards.....	131, 550
	<hr/>
	193, 050
	<hr/> <hr/>

From Fort McHenry to angle buoy below Hawkins's point 205,000 cubic yards.....	\$61, 500
From angle buoy to beginning of proposed new direction towards southward, 340,000 cubic yards.....	102, 000
New cut proposed, 200,000 cubic yards.....	60, 000
	<hr/>
	223, 500
	<hr/> <hr/>

*Channel two hundred feet wide and twenty-two feet deep at mean low water.*

From Fort McHenry to angle buoy below Hawkins's Point, 273,000 cubic yards .....	\$81, 900
From angle buoy to entrance buoy at mouth of river, 794,500 cubic yards.....	238, 350
	<hr/>
	320, 250
	<hr/> <hr/>
From Fort McHenry to angle buoy below Hawkins's Point 273, 000 cubic yards.....	\$81, 900
From angle buoy to beginning of proposed new direction towards southward, 560,000 cubic yards.....	168, 000
New cut proposed, 266,000 cubic yards.....	79, 800
	<hr/>
	329, 700
	<hr/> <hr/>

These estimates (at 30 cents per cubic yard) show that if we adopt the new direction proposed, a channel 150 feet wide and 22 feet deep will cost \$30,000 more than the straight channel. The new channel has, however, a better direction for permanence, judging from the indications of the map and from actual experience. All artificial channels require more or less work to keep them clear. It is believed that the new direction, though costing somewhat more in the beginning, would be cheaper in the end.

A channel 150 feet wide and 22 feet deep at low water is thought to be sufficient for the wants of Baltimore. If this is deemed too small, it would be preferable to increase the width rather than the depth. The estimates conform to this idea. I recommend that the new direction be adopted, and that Congress be asked to appropriate \$225,000 for excavating a channel 150 feet wide and 22 feet deep at mean low water from Fort McHenry to deep water at the mouth of the river.

A more careful examination of the channel will be made this season and the estimates revised thereafter, of which report will at once be made to the department.

#### SUSQUEHANNA RIVER AT HAVRE DE GRACE.

An examination was made in June of the channel dredged several years ago near Havre de Grace, which indicated that the lower cut, near Donohue's Battery, had filled up so much that the river had then nearly resumed the condition it had before the dredging, only a slightly increased depth remaining in the upper end of the cut. The upper cut, by reason of its direction coinciding more nearly with the tidal flow, has retained a greater depth, having filled up an average of about 18 inches. There is now at mean low water in upper cut a depth of 8½ feet; in upper third of lower cut, eight feet; middle of same, seven feet; lower third, six feet. Only about six feet can, therefore, be carried through the channel at mean low water.

Colonel Graham estimated that to give a depth of eight feet at mean low water and a width of 100 feet would require the excavation of 120,000 cubic yards of matter, the cost of which, at twenty cents per cubic yard, is \$24,000. Ten per cent. was added for contingencies, increasing the amount to \$26,400, which was appropriated by Congress, and became available July 1, 1866. It is proposed, unless contrary instructions are given, to commence operations in the spring of 1867, and to expend the money during the season in deepening the channel to eight feet.

It is probable that to keep this channel open to a greater depth than nature provided will require occasional dredging. The upper cut is more permanent than the lower, on account of its greater conformity to the natural direction of the flow of the river.

The lower cut would very probably be more permanent if a deflecting mass were placed on the flat near to and in a northwest course from the upper end of the cut. This mass might be composed chiefly of the excavated matter.

A new estimate is submitted herewith, based upon the examination of this channel made in June, and taking thirty cents as the cost per cubic yard of excavation and removal, which is greater than in Colonel Graham's estimate.

The plan for this channel adopted by the board of engineers was 100 feet wide and 10 feet deep, and the estimates herewith are for those dimensions.

An approximate estimate is also given of the probable cost of a simple deflector to direct the water through the lower cut. This deflector would require annual, though small and inexpensive, repairs.

The channel chiefly used in this locality before the dredging of the straight cuts is formed near the western shore of the river. The filling of the dredged channel is probably an indication that it has not the proper position or direction. It might be found advantageous, after more study of this subject founded upon a survey which is necessary, to improve the original channel at the places indicated in broken red lines, the longest cut being nearly perpendicular in direction to the deflector proposed for the straight cut.

An estimate is added of the cost of deepening the channel near the shore, from which it appears that this plan of giving a channel 10 feet in depth would cost less than one-half as much as to deepen the straight cuts and add the deflector. The money now available would suffice for the former plan, while it will be necessary to ask Congress for an additional appropriation of \$17,000 to complete the latter.

Before any large expenditure of money is made at this place, it is very desirable that an accurate survey be made of this portion of the river. Much would be gained in time if it could be accomplished during the coming autumn, as this would enable the local engineer to make a thorough study of the matter and prepare projects and estimates for consideration during the winter; the necessary funds could be appropriated by Congress at its next session, if more be required, and the work taken properly in hand next season. This survey could best be made by the officers of the United States Coast Survey.

*Estimates.*—For channel 100 feet long and 10 feet wide, straight cuts: upper cut, 36,000 cubic yards; lower cut, 72,600 cubic yards—108,600 cubic yards; \$32,580.

Deflector, composed of earth, &c., extending from Old Bay fisheries southeast towards upper end of lower cut, 950 yards long, 100 feet wide at base, 50 feet wide at top, 10 feet in height, wattled on up-stream side, \$10,890.

Opening a new cut to head of old channel under west bank of the river and following that down, 100 feet wide and 10 feet deep, 72,000 cubic yards, \$21,600.

IMPROVEMENT OF THE NAVIGATION OF THE HUDSON RIVER BELOW TROY,  
NEW YORK.

This improvement, requiring the removal of the deposits which have been brought down by the river current and lodged in its channel, was progressing during the last year under an appropriation from the State of New York, and had the necessary steam-dredging apparatus been at the disposal of the officer in charge (Colonel Graham) he would have recommended that a certain section of the work should be undertaken by the United States. After the death of Colonel Graham, Brevet Major General Newton, lieutenant colonel of engineers, was assigned to the charge of the work, and was directed in April last to advise with the State engineer and surveyor of New York in relation to it, and to present a project for its improvement at as early a day as practicable. The sum of \$35,000 was allotted from the appropriation for the "preservation and repair of certain public works of the United States," approved June 28, 1864, for the prosecution of the work. The proper steps were immediately taken by General Newton to carry out the instructions of the department, but up to the close of the fiscal year no report has been received from him. It is proper to state, however, that the work of improvement has for some time past been satisfactorily progressing.

## PLYMOUTH BEACH.

Brevet Lieutenant Colonel G. H. Mendell reports, under date of March 17, 1866: I received instructions to visit Plymouth beach to examine and report upon its condition, submitting a plan and estimate for such repairs as might be deemed necessary. Upon this report the department caused the sum of \$8,300 to be placed in my hands for the work.

No vouchers for expenditure have as yet been submitted, but a contract has been made with James and William Hall, of Plymouth, Massachusetts, to build and place 1,300 feet of breakwater for the sum of \$4,736. This breakwater is to consist of parallel triangular frames, placed 4 feet from centre to centre securely anchored in the sand, planked with two-inch plank.

These frames are from 9 to 10 feet in height, and stand above the level of the beach about 6 feet. This mode of protection has been long in use on this beach, and has served to collect the sand and form a firm beach, which in time dispenses with the necessity of the timber protection.

Besides this, it is contemplated to build a jettee out from the beach seaward, with a view to increase the deposits of sand, and thus serve to widen the beach.

The frame work is to be completed by the terms of the contract on or before 31st of October proximo.

Balance on hand June 30, 1866, on account of repairs of harbors on the seaboard, to be applied to Plymouth beach, \$8,300.

## PRESERVATION OF PROVINCETOWN HARBOR.

The officer in charge, General Benham, reports: Previous to this year, as I understand, in default of funds on hand for this harbor from any appropriation from Congress, the State of Massachusetts had appropriated \$100,000, to be used for the protection of this harbor, under the direction of commissioners appointed by the government, upon plans approved by officers of the United States; and of this sum, as I learn, some \$300 to \$400 were expended last autumn on the sea-ward side of the isthmus at the head of East Harbor meadows, upon plans suggested by the late Colonel J. D. Graham, then in charge of the Atlantic harbor works. The colonel also about the same time prepared plans for closing the inlet of East harbor with a loaded crib-work of hewn logs, at a cost of somewhat more than \$43,000.

In March, of this year, Major Blunt, of the engineers, and myself were directed by the Chief Engineer to make an examination of the locality and a report and estimate upon the best means of protecting this harbor.

This examination was made accordingly, as early as practicable, and our report in full detail was made out and forwarded to the department upon the 28th of April. I may remark that, though agreeing upon all points, we had each prepared a report with the intension of uniting them into one, but finally concluded that there could be no objection to forwarding each with the signature of both, which was done, each officer signing on the right hand at the close of the report he drew up; and I would respectfully refer to these as giving the fullest information possible for us to offer upon the condition of this harbor at that time. In these reports we agreed with Colonel Graham's project for a brush fence and grass protection at the sea-shore above East Harbor meadows; and also recommended some further protection to the extremity of Cape Cod, near Long Point, by an additional length of the plank fence and jetties, with the planting of beach-grass in rear; but we did not think Colonel Graham's project for closing the inlet expedient, as it appeared, from all the evidence we could obtain, to be filling up most rapidly from natural causes alone, and we could not be convinced that the sand could be drifted through that passage to any extent, to the injury of the harbor. We, however, recommend, for the present, that some protection by a bulk-head fence and jetty should be given to the narrow tongue of land called Beach Point, which forms this harbor, at about one-third of a mile east of the inlet; as also, that a small sum should be available for use from year to year, estimating \$8,000 only as necessary for present purposes.

The project and estimate were at once approved by the Chief Engineer, and the \$8,000 were called for from the treasury, and instructions sent to me to commence the work. This was at once attempted, and engagements were made for the delivery of the lumber, the first pre-requisite. But by the failure of those first bargained with to keep their engagements, and the delay of others, I found it possible to commence the work, and at Beach Point only, in the latter portion of the month of June, when the bulk-head fence was commenced, with its jetties, and at the close of the month and year the sum expended was \$447 45, leaving available to close the work \$7,552 55.

Although it may be improper to refer to operations beyond the year strictly called for, I would state that at this date the work has been carried on vigorously and successfully, so that what had formerly been considered the most exposed point, at the Head at East Harbor meadows, on the sea-side, (the three portions of shore especially referred to as much injured, by Colonel Graham, in his report of November 28, 1865,) has been very satisfactorily protected, and as far as deemed necessary for this season, several hundred yards of brush fence having been set out, and some six to seven acres of beach-grass planed. At Long Point, near the two batteries, much valuable protection has been given by new jetties of posts and a double-planked fence, and near the further battery from the light-house, where the shore was much abraded, a bulkhead fence nearly 1,000 feet long, with jetties and beach-grass in rear, and in some parts in front, have been planted. And it is hoped that early in the coming month the protection at present necessary there will be completed.

While at Beach Point a much more expensive and extended work has been found necessary than was at first estimated for; some 1,500 feet of much stronger bulk-head, with the necessary jetties, and with much filling of earth in rear, with beach-grass, has appeared to be, on the whole, most advisable to protect this barrier or dike of East harbor, and roadway of communication between Provincetown and the main part of Cape Cod. The large amount of timber, more expensive than was estimated, (from recent local causes,) with some injuries this work has twice received from heavy southwest gales while in course of construction, will cause the absorption of the whole of the \$8,000 estimated



or and received, of which we had hoped to retain a small portion for further improvement in another year. And though I shall endeavor to complete the work in hand early in the coming month, with the funds already received, I have some fear that a portion of the accounts may need to be paid from the new and last appropriation of \$43,068 44, if it is possible to make such payments for work carried on in this manner without further legislation; while if this cannot be done, I will trust that any small additional sum thus needed may be available from the same appropriation that the \$8,000 was furnished from—that for the harbors of the Atlantic coast.

The action of the fiscal year, therefore, upon Provincetown harbor has comprised in the autumn of 1865 a partial protection of the isthmus on the seaward side at the head of East harbor, by the planting of brush-fence and beach-grass, and near the close of the year the commencement of the extension of the bulk-head and jettee, with the planting of beach-grass in front of the batteries at Long Point, at an expense altogether of about \$800, about one-half of which was from funds provided by the State of Massachusetts, and for work approved by the late Colonel Graham. And it is expected that during the first three months of the present year all the additional protection at present necessary will be given to the positions above named, as also to the peninsula of Beach Point, which forms the East harbor.

#### DELAWARE BREAKWATER.

The necessity for a minute survey of this important work, that its actual condition should be developed, in order to the determination of the most advantageous mode of applying the portion of the existing appropriation allotted to it, together with the death of Colonel Graham, the officer in charge, and the impossibility of supplying his place, delayed its prosecution. Measures were taken, however, for its commencement without farther delay.

#### PORTLAND HARBOR BREAKWATER, MAINE.

The death of Colonel Graham, who was charged with the superintendence of this work, and the impossibility of immediately providing an officer to take his place, prevented the contemplated prosecution of its repair. In addition to this, the amount that could be allotted from the appropriation for the "preservation and repair of certain public works of the United States," approved June 28, 1864, was so inadequate to the work of repair that it was questionable whether the interests of the work or of the United States would be benefited by a commencement. Nothing, therefore, was accomplished during the last fiscal year.

#### SEA-WALLS OF DEER ISLAND.

Brevet Brigadier General H. W. Benham reports as follows:

In the report of my predecessor, Colonel J. D. Graham, of October 4, 1865, the manner in which these sea-walls were constructed and the resulting injuries are fully described, and I would respectfully refer to this report for the minute details in these respects. But generally I would state that these three sea-walls, which at the north head about 1,740 feet long, at the middle head 840 feet, and at the south head 380 feet in length, and respectively  $19\frac{1}{2}$  feet,  $17\frac{1}{2}$  feet, and  $14\frac{1}{2}$  feet high above the foundation, and, with the coping, are about 14 feet, 12 feet, and 12 feet, respectively, above mean high water, were built of regularly split quarried stone, with a partial dressing only, and laid dry as header, without mortar or concrete or rubble backing, and with the clayey gravel only in rear, which, silting out through the open joints, had, in the course of the 25 or 30 years which had elapsed, left in several places large cavities in rear of the wall, which, unsupported even by this sustaining earth backing, was thrown down by the violence of the sea in storms, with a threatened destruction of the entire walls in each case.



Colonel Graham's project for the repairs, and as executed by him, was to remove entirely the stones at each gap, as far down as it was injured, and then to relay them in their original position in mortar and with a backing of concrete to make a tight wall; the paving in rear of coping, with the layer of shingle beneath, being also restored. And in this manner the two or three main injuries to the north head had been repaired by the close of the last working season, a labor which comprised about 300 linear feet of wall, 50 running feet having been built previous to July, and for about 16 feet in height downward from the coping; while the lowest three courses of the wall, as I am informed, because no stones of these courses had been disturbed, were allowed to remain undisturbed and dry-set as before. As the funds were about exhausted with these repairs, the work was closed in November and the property placed in charge of a custodian, as I found it in my taking charge about the close of last March, in which condition it remained till the end of the fiscal year.

Money due June 30, 1865, from the work .....	\$570 25
Money received during year ending June 30, 1866 .....	8, 486 51
Amount expended, year ending June 30, 1866 .....	7, 881 53
	<hr/>
Funds on hand year ending June 30, 1866 .....	\$605 48
Amount due and unpaid June 30, 1866 .....	309 24
	<hr/>
Funds available after paying debts due .....	296 24
	<hr/>

In my report of April 12, 1866, to which I would respectfully refer, I alluded to the method pursued in these repairs, of taking up all the stone and placing them upon the bank, and then relaying them in position before commencing on another part; by which all the stones were handled twice over at least, by raising and lowering them some 12 to 15 feet. But as I think that very nearly all, except perhaps at the extremities of each of these walls, should be relaid in mortar and backed with concrete, as there can be no surety of the strength of any of the parts left that were similarly constructed with those that had already failed, I proposed in my report to relay the walls by "overrunning" them, partial course by partial course, from one end to the other of each wall; by which, except at the point of commencement, the stones in most cases would require but one movement, and a raising and lowering of but a few inches to each, by which means I doubted not that less than half the expense would give a more solid wall, as I propose in all cases to remove down to the lowest course, and to clear and fill with mortar the joints of that course even; for I can have no confidence that the earth backing will not silt out through the three lower courses left below the gaps already repaired, especially if the sea should sweep away the earth in front of these lower courses. This will make the wall of equal strength in all parts, and though more expensive than the work previously estimated for, it will be of far greater durability and strength. I have followed this course in the work which I have already commenced at a point that had been greatly injured, near the north end of the middle wall; and as I found the four upper courses of short thick stones and the six lower courses of long slender stones also laid as headers, I have taken advantage of this to mix the courses where the irregular widths of stone will permit us to tie the facing to the backing of concrete; and by relaying all but the lowest course, and filling the joints of that course and backing it with concrete, as can be done, I hope to have a wall approaching in strength that of the Great Brewster island, which has stood in that still more exposed situation entirely uninjured for the last sixteen to seventeen years, though the Deer island wall is still wanting in the heavy, well-jointed and dovetailed facing of the Great Brewster island wall.

Although I have great difficulty in obtaining the few masons that I need for

these works, and the season was so far advanced before I could commence operations, being notified of the appropriation only in the last week in July, I shall hope to complete this season the relaying, in the manner described, of the main or front line of the middle head. And with the \$38,000 that I judge it best to devote to this island, after reserving \$12,000 for Lovel's island out of the \$50,000 of the appropriation for both islands, I trust to be able to relay the main parts of each of the two remaining walls, and to complete all the protection that appears to be necessary at the extremities of the walls, and to add the necessary split-stone jetties in the intermediate positions. The work of the year, therefore, upon the sea-walls of Deer island consisted of the rebuilding in mortar, with a concrete backing, of the original dry wall of the north head, where it had been most seriously injured, to the extent of 250 linear feet, and for sixteen feet in height above the three lower undisturbed courses; while it is expected that the amount available for the present fiscal year will nearly suffice to relay in a still more secure manner the main portion of the wall of the middle head this autumn and during the next season, the front line of the south head, and the remaining portion of the north head next the part reconstructed last year.

#### SEA-WALL OF LOVEL'S ISLAND.

Brevet Brigadier General H. W. Benham reports as follows:

The provision for it has been included in the same appropriation with that of Deer island. I would respectfully report as follows in relation to this work for the year ending June 30, 1866:

The wall upon the island was, as described by Colonel Graham, built about twenty-three years ago, and under the direction and by the plans of Colonel Thayer. It is about  $10\frac{1}{2}$  feet high, including the foundation course of  $2\frac{1}{2}$  feet of concrete, and its coping is about  $22\frac{1}{2}$  feet above low water, and from its excellent construction it has, for the most part, stood nearly uninjured up to the present time, a slight bulge outward being the only defect observable in the main wall. But the action of the sea from the outer, or Ram Head, bar has worn away the shore to the foundation about the middle part, and there has been some injury to the eastern end, and to the dry stone jetty protecting this part. Colonel Graham (as by his report of last year) did not deem it expedient to commence operations there in 1865, other than by the building of a boarding-house for the workmen and the digging of a well, &c., which were nearly completed last autumn; and the island was placed in charge of a custodian, as I found it in March of this year. As upon my examination of this work I came to the conclusion that the labor necessary for the repairs or security of the existing wall, which was only the relaying of the dry stone jetty at the west end, the placing of another at the middle, and a second at the east end, with possibly the relaying of a small portion of the main wall, was an amount of work that I should judge could all be accomplished in three or four months of the best of a single season, and with a sum of \$12,000 of the joint appropriation; and as the appropriation became available so late in this season of a long session of Congress, I deemed it advisable, as stated in my report of April 12, not to attempt this work this summer, with the risk of the great loss of labor and material, even at times that would necessarily occur by having the work carried on in parts of two seasons, and I therefore judged it best to delay this work until next year, when the stone could be prepared and the work vigorously prosecuted to a close in the best part of the short summer season. And as to the additional wall recommended for the southeast head, no serious injury is anticipated from this short delay, while the funds available will not suffice for its commencement.

This island was previously, I may state, under charge of Major Blunt, who placed it in the care of some fishermen, who cared for the property and paid a small yearly rent. In August, 1865, it was turned over to Colonel Graham, a

his request, and after the construction of the buildings, &c., last season, it was placed in charge of a custodian, as I found it in March last. As I did not propose to carry on operations there this year, I discharged the custodian early in June, replacing the fishermen keepers, though without rent from them, but saving the expense of the custodian, in which situation it now remains.

As the funds expended upon the Lovel's Island work were from the joint appropriation for Deer and Lovel's islands, all the particulars as to the funds are accounted for in the statement in relation to the Deer Island sea-wall, being the funds of the same appropriation.

The work, therefore, for the fiscal year, towards the repair of Lovel's Island sea-wall, has consisted only in the construction of a boarding-house and its appurtenances, and the purchase of a portion of the tools, &c., the lateness of the season when the appropriation became available for use making it inexpedient to attempt further operations this year; while it was expected that early in the next season the necessary repairs and protection to the existing wall will be commenced and carried to completion in the best of the early part of the summer.

As to the further protection of the southeast head, for which the estimate was forwarded by Colonel Graham, in his report of October 4, 1865, for \$28,349 96, I would state that, in consequence of the expected reduction in the cost of stones of some 25 per cent., (as by an engagement I have just made for the Brewster island,) I would estimate the sum of \$25,000 as sufficient, if appropriated during the next session of Congress.

#### SEA-WALLS OF GREAT BREWSTER ISLAND.

General Benham reports: This work was commenced by myself in the year 1849, with an appropriation of \$40,000, upon plans prepared by Colonel Thayer, and with a contract made by him for about \$21,000 worth of cut-stone facing. During the summers of 1849 and 1850, the work was pushed forward as vigorously as possible, and to the expenditure of the whole appropriation shortly before the close of the working season of 1850, when the work was suspended, as no further appropriation was made that year.

This main wall, from four to eight feet in the ground, is constructed with its coping at 24 feet above low water, and is 18 feet high, with nine courses of cut-stone facing, of headers and stretchers dovetailed, with a foundation of concrete  $2\frac{1}{2}$  feet deep, and a backing of concrete extending about 10 feet back from the face of the wall. The concrete of both the foundation and backing being strengthened, and the expense for cement greatly reduced by introducing freely the boulders from the shores of the island, to the extent nearly of half the mass of material, a pavement of rough, flat quarry-stone, one to two feet thick, on 18 inches of gravel, extended 15 to 18 feet in rear of the coping.

At the close of the work in 1850 there had been built of this wall along the front or east of the south head about 375 running feet in length, being as much as was then deemed necessary there; this wall having wing walls at each extremity to the bluff, at the north end a concrete backed mortar wall, as I had thought requisite, but at the south end a dry wing wall was built, as specially ordered by Colonel Thayer. At the north head about 342 running feet of main wall had been constructed, (it being one course less in height for 43 running feet from south end,) and with dry wing walls at each extremity, that at the north being for temporary purposes only, during the suspension.

In the spring of 1851, during the violent gale that destroyed the iron lighthouse at Minot's Ledge, the dry wing wall at the south end of the wall of south head was destroyed, and the south face of that bluff much abraded. To remedy this, a sum of \$4,000 was furnished from the appropriation for contingencies of fortifications, with which a strong jettee was constructed, and the other necessary repairs were completed, but without further extension of the main wall. This jettee in a most exposed point, it may be stated—was about 50 feet long, arranged

of split stone 6 or 8 feet long used as piles, in two double rows some 12 feet apart, the outer ranges 3 feet in the ground, protected by concrete, the rows inclined towards each other inward, to hold as by dovetailing a course of large flat stone, filled in underneath with heavy boulders; and it has proved a most perfect construction, not a stone of this jettee or of the main wall itself, indeed, having been disturbed by storms or other natural causes in the fifteen years, which has therefore given me a very great confidence in the constructions of this character.

In May, 1852, the work was retransferred to Colonel Thayer, and by the calculations made by his direction, from the records left by me, the amount of main wall above referred to, 720 running feet, had been constructed with its wing wall and its paving for the most part, with all the necessary buildings, wharf and roads, for the sum of about \$30,500, leaving of material, &c., on hand available for future use, as reported by him, to the amount of \$9,500 nearly, while my estimate at that time was \$35,000, as necessary to complete the amount of main wall then deemed requisite in addition—that is, 1,180 running feet additional on north head, or 1,522 running feet altogether of large wall.

In 1853 an appropriation of \$30,000 was made, and the work recommenced under Colonel Thayer, and carried on in the years 1853 and 1854, and with that sum and the available material left in 1851, about 9,500 dollars worth, as reported on hand, about 640 running feet additional of wall was completed on the north head without its paving in rear, and, as appears by the records, about 2,000 dollars worth of materials was left on hand, and \$6,200 in funds, which, with the buildings &c., were transferred to Colonel Graham in 1864.

For the operations since that time I would respectfully refer to the report of Colonel Graham for the year ending June 30, 1865, and to my own report of April 12, 1866, after being charged with this work. From them it will appear that there was appropriated for the years ending June 30, 1864 and 1865, the sum of \$60,000, and that the sum of \$6,200 was received from Major Blunt, and that about 145 running feet of main wall, without paving, but with an extra two-foot course at the foundation, has been constructed towards protecting the south face of the bluff of the south head, and that the stone facing for about the like amount of wall as when the work was received by Colonel Graham is now also on hand.

Upon receiving charge of this work, the last week in March, and finding a force employed at a cost of about \$40 to \$45 per day, while the appropriation appeared to have been entirely exhausted, or compromised by the debts of the work, as I could see no advantageous occupation for the force, after reporting the case and receiving the directions of the engineer department, about the 20th to 25th of April I discharged the force from the work, except the clerk and a custodian, and a reduced crew of the schooner, and no further work was carried on afterwards till the close of the fiscal year.

In my report of April 12, 1866, I gave, in considerable detail, the objects of expenditure to which the sums available under Colonel Graham had been applied, as appeared from the records, and the statement prepared or given by his assistant, Lieutenant Adams, and the clerk and principal practical overseer; and as it is also in some degree shown in Colonel Graham's report, it may not be deemed necessary to repeat them now, more than to give the statement of the funds received and expended as follows, as appears by the records:

The amount due from the work June 30, 1865.....	\$1, 801 58
Which was paid, and in addition there was expended during the year ending June 30, 1866.....	41, 029 95
Total expenditures.....	<u>43, 831 53</u>

Received during the year ending June 30, 1866.....	\$43, 732 39
On hand June 30, 1866.....	900 56
Indebtedness not paid. ....	3, 180 96
Required to balance accounts from the last appropriation.....	2, 280 10

I may add further, upon first receiving charge, and in the hope then of immediate passage of the appropriation since granted, I had hoped to have nearly the two full seasons for the most advantageous expenditure of these funds, during which I expected to complete the most if not all of the main wall required, which is, for about 260 running feet more at the south head, and about 540 running feet more at the north head, or 800 running feet additional in all. But I did not receive notice of the passage of the appropriation, and authority to act upon it, till the last week in July, and, as was reported at once, the season was then so late that I could not expect to advertise for contract, get quarried, cut and delivered at the island, any amount of the cut facing stone under three months. And as it was not expedient to attempt such a contract this summer, at the present high prices, to be delivered next year, when they would probably be much lower, with the winter to prepare them in if the contract were made later. I could therefore only limit myself to laying up the stone on hand, with some 150 to 200 running feet that I was able to engage by private purchase much more speedily, as I have done, and with which I shall endeavor to complete the main wall of south head this autumn, though I have the greatest difficulty at this time in procuring the necessary mechanics, many of those I have conditionally engaged from the long delay having gone to other works.

I now propose to offer a large contract for material to be prepared during the winter, and to be delivered in the early summer, with which I hope to push forward during the next year to completion the protection of all the most exposed portions of the main bluff or north head. I expect to keep a force occupied during this winter to complete the paving in rear of the work already executed, which has been entirely neglected since my former charge of the work, and which can be executed during the favorable weather of winter.

In recapitulation of this report, therefore, of the operations on the sea-wall of Great Brewster island, the work during the season of 1865 comprised, as stated in the report of Colonel Graham of October 4, the construction of the buildings, railway and wharf deemed to be necessary for the work, and as then stated to be expected. The main wall for the protection of the south side of the south head was extended for about 145 to 150 feet, when the work was essentially closed for the season from the exhaustion of the funds.

It is expected, however, that with funds now available, \$75,000, the whole of the main sea-wall still necessary can be constructed to give the protection to the most exposed portions of both the north and south heads, and it is believed that a further sum of \$25,000, if appropriated during the ensuing session, will be sufficient to give all the additional protection required in the construction of stone jetties at the outer angles and ends of the main wall, and for the additional small wall required to protect the less exposed portions of the north head.

#### DUXBURY BAY, MASSACHUSETTS.

On the 19th of May, 1866, Brevet Lieutenant Colonel G. H. Mendell, major of engineers, was directed to make an inspection of the beach at this place, which had been represented to the department as being liable to overflow, and reports as follows :

In obedience to the instructions of the department, I visited Duxbury and the neighboring beach and conferred with Mr. G. B. Weston.

I beg to submit the following remarks on the object of the instructions of the department.

Duxbury bay and harbor are separated from the Atlantic ocean by a long,



narrow beach extending for five or six miles from the mainland, in a southeasterly direction to a headland called the Gurnet, thence westerly a mile or more to another high point known as Saquish Head.

The beach throughout most of its length is about seventy-five yards in width, and rises to a general level of about ten feet above ordinary high tides. In many places, depressions of several feet occur, through which, it is said, the sea is liable to flow on the occasion of a spring tide, accompanied by the prevalent easterly wind.

On the Gurnet there is a field-work, and on Saquish Head another, both built during the war, which constitute the defences of Plymouth as well as Duxbury harbor. Mr. Weston represents that these points are at times, for a couple of months in the winter, inaccessible by water, the beach being the only communication. In this statement, to my mind, lies the main argument that can be urged with any force, in favor of the proposed repair. As the harbor appeared to me, and from the best information I could gain, it is of little value, on account of the flats which occupy almost all its extent. I have not seen a chart of the harbor, and have been compelled to form my opinion from a cursory examination, but I would respectfully refer to the Coast Survey report for the depth of water, &c. There is no commerce, and even the fishing smacks have sought other ports.

About thirty years ago an appropriation of \$5,000 was expended upon this beach, under the direction of Colonel Totten, in planting two rows of stakes three or four feet apart and filling the enclosed space with brush and seaweed, which served to collect and retain the sand, upon which beach-grass was set out. The grass gave cohesion to the mass and held it in place, long after the wood-work had disappeared.

This simple measure seems to have served a good purpose, and if it be decided to repair the beach now, I would recommend this as the most economical means.

The aggregate in length of the breaches or depressions is supposed to be about two miles, and will require about \$4,000. The estimate as to the length is that of Mr. Weston rather than my own, as the stormy weather prevented me from ascertaining the fact for myself. I was the less inclined to spend much time in measurements, as the whole project struck me as one I could not recommend.

#### SANDY HOOK, (PROTECTION OF SITE.)

Brevet Colonel F. E. Prime reports as follows: The first experiment of placing a canal-boat, jettee No. 1, vertical to the high-water line on the east shore, abreast of the works, and filling it with concrete to serve as a jettee, having resulted favorably, a second canal-boat was placed in advance of the first, filled with concrete, and the junction of the boats well secured by a heavy body of concrete masonry. Thus jettee No. 1 was lengthened ninety-seven feet and six inches, making the total length of jettee one hundred and seventy-one feet. A second jettee, No. 2; ninety-five feet long, consisting also of a canal-boat filled with concrete, was established in October, 1865, at a point five hundred and sixty yards south of the first jettee. This jettee, a few days after being completed, was broken up in a northeasterly storm, but again in part rebuilt in the spring of 1866. The winter storms having isolated the bottom of the canal-boat, which yet remained partly covered with concrete in its original position from the shore, a jettee had to be run out to connect the high water line with this wreck. This connection was nearly made at the end of June. The length of jettee No. 2, thus far built, is seventy-four feet; a plank fence about sixty feet long connects this jettee with the crest of the highest water line. At a point about three hundred and sixty-three yards northwest of jettee No. 1, a third jettee, No. 3 was started, consisting of a concrete body with sloping sides resting on level plank platforms; its length, at the end of the fiscal year, was forty-six feet and six inches. This jettee was also connected by a plank fence with the crest of



the highest water. In the latter part of June a fourth jettee, situated one hundred and twenty yards northwest from jettee No. 1, was taken in hand and carried out some thirty-seven feet in length.

To connect the above-mentioned jetties with the work and the wharf, plank tracks had to be established previous to the commencement of operations.

During the balance of the season it was intended to complete jettee No. 2; to build about one hundred running feet of concrete portion of jettee No. 3; to build a concrete return of forty or fifty feet long to the north and perpendicular to this jettee to protect it from the destructive action of northerly storms, (see my letter of 16th July, and department letter of 2d August; to construct jetties Nos. 4 and 5 so that the outer extremities of the concrete portion would not extend beyond a line connecting extremities of jetties Nos. 1 and 3; to build one (perhaps two) short jetties between Nos. 1 and 2, to protect jettee No. 2 during the winter.

For the ensuing season nothing is proposed until the effect of the winter storms has been seen.

#### SHORE IMPROVEMENTS.

Concrete placed in jettee No. 1.....	506	cubic yards
Concrete placed in jettee No. 2.....	263	" "
Concrete placed in jettee No. 2, (reconstructed) .....	185	" "
Concrete placed in jettee No. 3.....	64.58	" "
Concrete placed in jettee No. 4.....	47.70	" "
Total.....	1,066.37	" "

Total lengths of jetties built in year.....	255	running feet
Total lengths of plank fences at jetties .....	150	" "

#### Tracks established to jetties:

Plank track to jettee No. 2.....	1,490	running feet
Plank track to jetties Nos. 3 and 4, &c.....	2,320	" "
Total.....	3,810	" "

#### HARBOR IMPROVEMENTS ON THE LAKES.

Under the appropriation of \$250,000 made in 1864 for the preservation and repair of certain public works, &c., the repairs of several of the most important harbors, for which allotments were made, have been completed, with the exception of those at Chicago, which were delayed to enable the city authorities to perform the work proposed by them, viz., the extension of the north pier.

At Cleveland the work was prosecuted as far as the circumstances of the case would allow. The railroad companies having taken almost entire possession of the east pier, using it, much to the injury of the structure, as a place of deposit for freight, as well as for business purposes generally, in spite of the remonstrances of the engineer in charge, and in defiance of all his efforts to obtain possession of it for the purposes contemplated by the law, he was compelled to confine his operations to the repair of the west pier, which has been completed. In this connection it is respectfully suggested that the railroad companies now trespassing upon this important public work be compelled by legislation to vacate the same without unnecessary delay; or if permitted to retain possession of it, that they be compelled to pay to the government a yearly rent for the use of the same, obligating themselves to keep it in good repair and to keep the harbor at all times free from obstructions to vessels seeking either in the way of commerce or for safety.

## BUFFALO HARBOR, NEW YORK.

Captain Tardy, the officer in charge of this work, reports as follows :

*Light-house pier, Buffalo, New York.*—Work on this pier was commenced in the summer of 1865, and the funds available expended by fall. The work was carried on in accordance with the plan proposed in the report for the fiscal year ending June 30, 1865, of which the following is an extract :

"This pier is very much out of repair; the piles on the harbor side and at the extremity need replacing. The stone-work on the harbor side has been injured and thrown out of place through the action of the ice. The outer slope (lake) was paved from the top of the pier down to the water's edge with large stones inserted edgewise, and additional protection was given to this slope at various times by throwing in rip-rap and driving piles. This has not, however, answered fully, and the pavement in many places has been completely displaced.

"The amount available for repairs being small, it was determined to expend it in protecting the most exposed portions, *i. e.*, the lake slope, leaving the harbor side for the present. It was evident that the taking up and relaying of this pavement would be a mere waste of money without first adopting some plan for breaking the force of the sea before it should reach this slope. The plan determined on was to sink cribs filled with stone along the outer edge of the rip-rap, already thrown in, with a row of piling on the exterior, and then to fill in the space between the pier and cribs with rip-rap. Having in this way obtained a more extended base, causing the seas to break at some distance from the paved slope, the latter could be repaired without danger of being again broken up."

In accordance with this plan, 594 cords of stone were thrown in on the lake side of pier, and 16,710 lineal feet of piling driven on extremity and lake side, and several cribs placed in position.

*Summary statement of expenditures during the fiscal year ending June 30, 1866.*

Labor.....	\$4, 249 29
Piling.....	4, 177 50
Stone.....	1, 782 00
Transportation, hire of boats and towing.....	2, 333 00
Timber for cribs.....	929 14
Iron for cribs.....	299 89
Machinery and gearing.....	716 02
Hardware, tools, &c.....	149 70
Coal.....	16 00
Contingencies.....	203 13
Total expended.....	<u>14, 855 67</u>

Notice has been received of an additional appropriation of \$100,000 having been made by Congress for the "improvement of harbor at Buffalo, New York." Work has not been resumed on this pier, as the season is so far advanced that it would be very difficult, if not impossible, to obtain the necessary material this fall, and, also, as it was desirable that further examination should be made and a report of the same, with a project for the expenditure of this money, submitted to the department for its approval. A report on this work will be submitted in connection with the surveys and reports already ordered, and in time to enable such arrangements for materials to be made as to permit of the work being resumed early in the spring.

REPAIR AND COMPLETION OF THE SEA-WALL AT BUFFALO, NEW YORK.

Captain Tardy reports: Operations this season were resumed about the last of April, and were carried on until the close of the year, when, the appropriation being nearly exhausted, preparations were made to cease work. Notice of an additional appropriation for this work having been received, it will be pushed forward, and it is hoped completed by the close of the fiscal year ending June 30, 1867.

1,303 feet of wall has been built during the year, 357 of which has been coped. This wall, complete, contains 52 cubic feet of masonry in each lineal foot, and 48.5 cubic feet, exclusive of coping; there has been laid, therefore, in this length of 1,303 feet, 2,386½ cubic yards of masonry. This wall being much exposed, has been built in the very strongest manner, being composed of large blocks of stone, with frequent headers going through and through, the superstructure resting on a concrete foundation.

No further appropriation is asked for, as the amount available is deemed sufficient.

The amount expended during the fiscal year ending June 30, 1866, was \$27,059 63.

*Recapitulation.*—During the fiscal year ending June 30, 1866, 1,303 feet of wall has been built, of which 357 is coped. This length of wall contains 2,386½ cubic yards of masonry. The total amount expended during this period was \$27,059 63.

GENESEE RIVER HARBOR.

Captain Tardy reports: The repair of the west pier was carried forward during the summer of 1865, and the appropriation exhausted by the close of the season, so that operations were not resumed this spring. Notice having been received of another appropriation, work has been resumed on this pier, and it is hoped that it will be in a complete state of repair by the close of the season. The reconstruction of the east pier cannot be commenced before next season, as the necessary materials could not be purchased in time.

The following statement shows the amount of work done during the fiscal year ending June 30, 1866, on the west pier:

The end of this pier has been restored and raised to a height of three feet above water, consisting of 230 lineal feet of new crib-work, 20 feet wide and 11 feet deep; also 110 lineal feet of new crib-work, 10 feet wide and 8 feet deep, secured by iron bolts and tree-nails, filled with hard stone and decked with 3-inch pine plank; 486 lineal feet repaired, filled, and planked; 358 lineal feet repaired and filled.

*Summary statement of expenditures during the fiscal year ending June 30, 1866.*

Labor.....	\$3,464 88
Lumber.....	6,316 72
Stone.....	3,377 50
Transportation.....	62 91
Iron, tools, and sundries.....	747 91
Total expended.....	<u>13,969 92</u>

The amount expended during the fiscal year ending June 30, 1865, was \$11,141 43, making the total expenditure thus far \$25,111 35.

The amount appropriated for this harbor is deemed sufficient to complete the proposed repairs, and no more is asked for.

*Recapitulation.*—The repair of the west pier was pushed forward during the summer of 1865, and the available funds exhausted by fall. \$13,969 92 was expended during the fiscal year ending June 30, 1866, and the total expended up to this time on the repairs of this harbor amounts to \$25,111 35.

The amount recently appropriated is deemed sufficient to complete the proposed repairs.

#### REPORT OF OPERATIONS FOR PRESERVATION OF OSWEGO HARBOR.

Brevet Lieutenant Colonel C. E. Blunt, engineers, reports: The funds expended during the year, (\$17,420,96,) which were derived from the appropriation for repair and preservation of lake harbors, were applied exclusively in repairing the western or United States pier; in repairing old and building of new cribs, filling them with stone; replanking top and lake side of pier, and raising and levelling parts of pier.

Three hundred running feet of new crib-work on the lake side, (cribs 14 feet by 11 feet.)

Three new cribs, 10 feet by 12 feet, put inside of sections of old work.

Three sections of cribs planked inside with hard-wood plank.

Six hundred and forty-nine running feet of 3-inch hard-wood plank placed on outer face of pier.

Seventy running feet of the pier raised (at 2 feet) and levelled.

Fifty running feet of new crib-work, fifteen feet wide, for jettee (old one carried away) at northwest angle, about half finished.

Sixty-four running feet of old counterfort on inside of pier (30 feet wide) raised on an average 5 feet and ballasted with stone.

Operations have been prosecuted wherever the state of the lake would permit. The pier, from original defect of construction, is likely to require constant repair.

Of the sum assigned to the work from the appropriation for repair and preservation of lake harbors, (\$25,000,) there remains unexpended July 1 about \$6,600, (August 1, \$4,400) This amount will be absorbed by the repairs now (August 7) in progress.

An appropriation having been made by Congress, no recommendation for additional funds is suggested.

#### HARBOR AND RIVER APPROPRIATIONS OF 1866.

The "act making appropriations for the repair, preservation, and completion of certain public works heretofore commenced under the authority of law, and for other purposes," approved June 23, 1866, having been passed so near the close of the fiscal year, the operations required therein were undertaken at a date subsequent thereto, and therefore do not properly belong to the annual report; but inasmuch as the department is required by the above act to report all action taken specially under its provisions, the following summary is presented at this time, leaving for the subject of special reports the details of the operations when the officers of the corps intrusted with these labors shall have completed their examination and surveys, and shall have prepared projects and estimates of cost for completion thereof, the works of improvements and the localities to be surveyed were promptly assigned to the officers of the corps stationed at the nearest locality to the various works, and to whom were already assigned the works of defence on the sea-coast and lake frontier, in accordance with the orders of the War Department to the chief of engineers to proceed to carry into effect the provisions of the act of Congress. Of the works of improvement on the sea-coast, beginning on the coast of the State of Maine, those at Portland, Kennebec river and Saco river were assigned to Brevet Brigadier General B. S. Alexander, major of engineers, as also the surveys of Kennebec and Penobscot rivers; those at Provincetown harbor, Massachusetts, to Brevet Brigadier General

H. W. Benham, lieutenant colonel of engineers; those of Thames river, as also the survey of Bridgeport harbor, Connecticut, to Brevet Major D. C. Houston, captain of engineers; those of Hudson river, as also the surveys of Hell-gate, East river, New York, to Brevet Major General John Newton, lieutenant colonel of engineers, assisted by Brevet Lieutenant Colonel J. M. Wilson, captain of engineers; those of Delaware breakwater and of piers at Marcus Hook, Delaware, as also the survey of Chester harbor, Pennsylvania, to Brevet Lieutenant Colonel C. S. Stewart, major of engineers; those of Patapsco and Susquehanna rivers, to Major W. P. Craighill, corps of engineers.

Of the works of improvement on the northern and northwestern lakes, those of Burlington harbor, Vermont, as also the survey of Burlington harbor, and Ogdensburg harbor, New York, were assigned to Brevet Brigadier General C. B. Reese, captain of engineers, assisted by Brevet Major C. J. Allen, corps of engineers; those of Oswego, Little Sodus, and Big Sodus, New York, to Brevet Lieutenant Colonel C. E. Blunt, major of engineers, assisted by Captain Jared A. Smith; those of Genessee river, Buffalo harbor, and Buffalo sea-wall, as also the survey of Oak Orchard, Eighteen Mile creek, and Dunkirk harbor, New York, to Captain J. A. Tardy, corps of engineers; those of Erie, Pennsylvania, Conneaut, Ashtabula, Grand river, Cleveland, Black river, Vermillion, Huron, Sandusky, and Maumee, Ohio, Monro, Michigan, St. Clair flats, Saginaw, and St. Mary's river, as also the survey of Sandusky river, to Brevet Brigadier General T. J. Cram, colonel of engineers, assisted by Brevet Major F. U. Farquhar; the surveys of Au Sable river, Marquette, Lac la Belle, Eagle harbor, and Superior City, to Brevet Colonel W. F. Raynold's, major of engineers; the works of improvement at Aux bec Scies, Grand Haven, Black lake and St. Joseph, Michigan, Michigan City, Indiana, Chicago, Illinois, Kenosha, Racine, Milwaukee, Sheboygan, Manitowoc, and Green Bay, Wisconsin, as also the surveys of White, Manistee, and Muskegon rivers, Michigan, to Major J. B. Wheeler, corps of engineers, assisted by Lieutenants A. Mackenzie and James B. Quinn.

Of the works of improvement on the western rivers, those of the Mississippi, Missouri, and Arkansas, as also the survey of portions of the same, to Brevet Colonel J. N. Macomb, lieutenant colonel of engineers, assisted by Brevet Major C. W. Howell; those of Des Moines and Rock Island rapids, as also the surveys of Rock river and Illinois river, to Brevet Major General J. H. Wilson, captain of engineers, assisted by Brevet Lieutenant Colonel P. C. Hains; and the survey of the Upper Mississippi river, from Fort Snelling; and falls of St. Anthony to Rock Island rapids, and from Des Moines rapids to St. Louis, Missouri, of Minnesota river, St. Croix, Cannon, Lambro, and Fox and Wisconsin rivers, to Brevet Major General G. K. Warren, major of engineers, assisted by Brevet Major C. R. Suter and Brevet Colonel S. M. Mansfield; those of the Ohio river, and the survey of the same from Pittsburg, Pennsylvania, to Buffington island, West Virginia, and Grand Chain, to Mr. W. Milnor Roberts, civil engineer; those of the mouth of the Mississippi river, to Brevet Colonel M. D. McAlester, captain of engineers, assisted by a lieutenant of engineers. At the same time the chief of engineers issued the necessary instructions, accompanied by a printed copy of the act of Congress, and, subsequently, upon the call of officers, by copies of reports and maps of surveys, as far as it was in the ability of the bureau of engineers to supply them from its records, for their information and guidance.

In compliance with those instructions many preliminary reports have been rendered, and in all cases where no survey or examinations of a minute character were desired, and where no modification of plan seemed to be demanded, proposals have been invited by advertising in the authorized newspapers in the States where the improvements are located and those nearest thereto. For many of the works proposals have been received, and the contracts for material and labor are being prepared. Contracts for repairs of the light-house pier at Oswego,



and for dredging the harbor, have been concluded, as also for the repairs of the piers at Grand Haven, Michigan, both of which were cases of emergency.

To carry into effect the provisions of the act a portion of each appropriation is necessarily reserved for the purpose of meeting contingent expenses, embracing payment to inspectors of material and of work executed under contracts, mileage of officers and agents travelling under orders, stationery, &c.; but if this course be deemed inconsistent with the strict construction of the terms of the act, it is respectfully suggested that a modification thereof be made, so far as setting apart a small amount of the appropriation for each work for meeting such contingent expenses—say ten per cent. of the appropriation, if indeed it might not be expedient to authorize the Secretary of War to expend the appropriation either by contract, by open purchase in the market, and by the employment of mechanics and laborers, as he may deem most advantageous to the interests of the government as well as to the interests of the localities to be improved. Difficulties have already arisen; proposals have been invited anew, in cases where the lowest bidders have failed to furnish the necessary bonds, and the next lowest bidders have claimed a contract as being the lowest responsible bidders.

The instructions from the department require that the contract be awarded to the lowest bidder who shall furnish adequate bonds. As yet, however, none of the contracts of these doubtful cases have been concluded; they are still held under consideration.

It is believed that most, if not all, of the projects, with estimates of cost for the improvement of the localities enumerated in the last section of the act, as well as those of the works heretofore commenced, will be received in time for the action of Congress at the approaching session, and will be severally submitted as soon as received.

Much delay has ensued in carrying on the works under the present requirements of the law, and still further delay will occur. In many cases no interest whatever is felt in the actual execution of the work by those from whom the material and labor are expected to be obtained; for instance, at Oswego, New York, there is but a single bidder for labor and material. At this harbor, to execute the dredging, two contracts are made; one for the digging and raising, the other for towing off the dredged material. At Marcus Hook but a single bidder, who first entered into contract and gave bonds, but when called upon to perfect the same, on account of some informality he declined. It thus became necessary to advertise anew. The following remarks in support of these statements are herewith submitted.

General Benham reports: I shall endeavor to keep the expenditures this year (at Provincetown) within the amount I now have on hand, and shall trust that more funds will not be needed until there shall have been an opportunity for Congress to revoke some of the conditions of that law, to make the funds available for practical use, which, if I understand it aright, does not appear to be the case now; for if, as would appear by the third section of the act, in constructing any work each kind or class of material, as timber, iron, brick, stone, &c., and each kind or class of labor on such material, as carpentry, smithery, masonry, ordinary labor, &c., is to be advertised for and contracted for separately, I can conceive as yet of no means by which it will be practicable to bring such labor together at the proper times.

Brevet Lieutenant Colonel Blunt reports: In endeavoring to carry out the instructions of the department of 13th and 15th August, in the matter of improvements at Oswego and Great and Little Sodus, New York; to obey the regulations and the strict letter of the law making the appropriations, and at the same time to execute the work which seems to me indispensable to attain the objects for which the appropriations were granted, I meet with several difficulties, which would be easily surmounted if the law relied at all upon the in-



tegrity or judgment of the constructing officers, which it does not seem to do, but on the contrary, to tie their hands from first to last.

I desire respectfully to refer to these difficulties (mainly of forms) and to ask instructions or information thereto. The framers of the law seem to have been entirely ignorant of existing army regulations upon the subject of contracts; and the practice under these regulations is not what this law requires. The law being the most recent must be assumed to govern and to supersede regulations when inconsistent with it. Regulations (par. 1,046) require contracts to be made with the lowest responsible bidder, but give the option of rejecting that bid if unreasonable. The law gives no such option, but says that the contract shall only be made with the lowest responsible bidder; nor can the contract be made at all until after the security given by the bidder shall have been approved by the Secretary of War, who cannot, in ninety-nine in one hundred cases, any more than the bureau, know anything about the bondsmen.

General Cram reports: Each harbor where work is to be done and materials furnished requires ten copies of contract, and each place where dredging, five copies, to comply with the conditions of the laws of June 2, 1862, and of June 23, 1866. The amount of writing is truly enormous, and the forms to be gone through are exceedingly onerous, and tedious beyond measure, before we can commence work or get materials.

Respectfully submitted:

A. A. HUMPHREYS,

*Chief of Engineers, Brigadier and Brevet Major General.*

Hon. E. M. STANTON,

*Secretary of War.*

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## APPENDIX TO REPORT OF THE CHIEF OF ENGINEERS FOR THE FISCAL YEAR ENDING JUNE 30, 1866.

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*Annual report of the survey of the north and northwest lakes, by Brevet Colonel William F. Raynolds, 1866.*

OFFICE UNITED STATES LAKE SURVEY,  
Detroit, October 8, 1866.

SIR: I have the honor to submit the annual report of the survey of the north and north-western lakes, being the third since this duty has been under my charge.

The operations of the survey have been continued during the past year on the same general plan that has been pursued for several years. The system is that of triangulation, based upon carefully measured bases when this is practicable; and when it is not, the azimuths between distant headlands are carefully determined and the work is checked by astronomical observations.

The filling in between points is done by careful surveys with the theodolite and chain, the topography being sketched with the aid of the level or stadia.

The hydrography and topography adjacent to the shore is executed by the same parties that survey the shore-line. The more distant or off-shore hydrography is obtained by the parties on the steamers, who are also, as a general thing, charged with the primary triangulation, as well as the preliminary reconnoissance incident thereto.

Separate parties are especially detailed for "astronomical duty," who determine differences of longitude by telegraphic signals, when the telegraph can be brought into requisition, and where this is impossible by simultaneous observations of powder flashes. These parties also determine the latitude by observations with the differential zenith telescope.

The system of combining the topographical and hydrographical duties under the same parties has been found by experience to produce the most satisfactory results: First, by enabling these parties to make better use of the time by employing calm weather for hydrography, and the more boisterous weather for their work on shore; and secondly, by preventing the discrepancies that are almost inevitable when two parties go over the same ground.

The character of the country in which the surveys are being prosecuted forbids that attention to the details of topography that would otherwise be desirable. It is the exception to find

anything but a dense forest, in which it is impossible to make an accurate survey without opening every foot of the lines of sight.

No sketching can be done that is reliable. Parties within easy hearing distance cannot see each other; and last, though by no means least, during the summer season, which is the only one in which work can be done at all, the forests are so full of venomous insects that it is next to impossible for an instrument to be used.

The stadia has been found most available for overcoming these difficulties, being much more rapid; and the results obtained with it rivalling in accuracy those of the plane table.

The value of thoroughly accurate charts of the lakes can hardly be overestimated. The annual commerce that passes over them already rivals in magnitude and importance that of the coasting trade of the Atlantic, and the rapid growth of the country is adding to it daily.

As perfect knowledge of every danger to navigation lessens the risk, and consequently the cost of transportation, of every bushel of produce that leaves the country, or every dollar's worth of merchandise that comes into it—thus, in both ways, facilitating the exchange of products between the consumer and producer, and binding in one interest the different sections of our widely extended country—it is, therefore, clearly the duty of the government to render all practicable aid to interests of such paramount importance, affecting all classes of community, both east and west.

The army regulations require a report in time to reach the bureau by the 20th of October of the operations of the survey during the year ending the 30th of June, &c.

The date to which the operations of the survey are required to be reported is the most unfavorable that could be selected for reporting upon the amount of work done by the several parties, if the attempt is made, as heretofore, to report on the work then in progress, as by the 30th of June the season is but fairly commenced, it being, as a general thing, impossible to get the parties at work in the field before the last days of May.

I shall, therefore, hereafter in my annual reports confine myself to details of the work of each party for the previous season, and the office work up to the 30th of June, as required by the regulations referred to, giving but a brief statement of the localities in which the work is progressing at the date of my report. This will render it necessary to repeat a portion of my last annual report; but the advantage to be gained is evident, and I cannot but think it will be a more strict compliance with regulations than the course heretofore pursued.

#### SURVEYS IN 1865.

The survey was carried on during the season of 1865 in Green bay and Lake Superior, one steamer and two shore parties being assigned to Green bay, and one steamer and three shore parties to Lake Superior. One astronomical party, generally divided into two, and sometimes into three sections, was assigned to the duty of making observations for latitude at several points in both localities, and determining differences of longitude by telegraph and other instantaneous signals.

#### GREEN BAY.

Assistant O. N. Chaffee was in charge of the steamer Surveyor in Green bay. The duty assigned to him was to complete the primary triangulation of the bay from the base line on Chambres island southward to the head of the bay, to make a hydrographical survey of the middle portion of the bay (beyond the reach of small boats from shore) between the same limits, and a minute survey of the head of the bay and the lower part of Fox river, besides exercising a general supervision over the shore parties, keeping them supplied with provisions from the general depot, which was made at Little Sturgeon bay, and affording them such aid as was in his power when changing their camping grounds. He sailed from this city on the 9th of May, and returned on the 14th of October, having completed the duty assigned to him. The amount of work accomplished by Assistant Chaffee during the season was as follows, viz :

Number of stations for main triangulation .....	15
Number of theodolite pointings for do .....	4,666
Number of angles measured .....	143
Number of lines of soundings run with the steamer .....	128
Number of miles of soundings run with the steamer .....	906
Number of casts of the lead .....	2,058
Number of theodolite pointings locating do .....	3,442
Number of sextant angles .....	800
Number of square miles off-shore hydrography .....	444
Number of water stations placed on dangerous shoals .....	3

#### *In minute survey of the head of Green bay, &c*

Number of sounding stations built .....	90
Number of buoys placed out and located .....	68
Number of lines sounded with small boats .....	489
Number of miles of lines sounded with small boats .....	392
Number of square miles of hydrography .....	25

Number of casts of the lead.....	28, 274
Number of miles run with stadia for topography .....	57½
Number of square miles of topography .....	15
Number of compass bearings for magnetic declination.....	34
Number of miles run by steamer on general duty .....	2, 492
Number of miles of shore-line run .....	42

The computations and projection of the above work occupied the time of Assistant Chaffee and Assistant Towar until it was time to make arrangements for again taking the field.

The maps were upon four sheets of antiquarian paper, two of which included the head of Green bay and entrance to Fox river, on a scale of one sixteen-thousandth, on which were delineated 441 square inches of topography and 474 square inches of hydrography. The remaining two sheets include the off-shore hydrography from Long Tail Point to Sister bluff, on a scale of one sixty-thousandth, and embraced 602 square inches of hydrography.

Assistant A. C. Lamson, aided by Assistant G. A. Marr, was in charge of the topographical and hydrographical party assigned to duty on the east shore of Green bay, with instructions to continue the survey of that portion of the coast extending from Egg harbor southward until he met the work of Assistant O. N. Chaffee.

His field included the important indentations of Big and Little Sturgeon bays, which he was required to survey minutely.

Assistant Lamson and party sailed from this city on the 16th of May, and returned on the 10th of October, having finished the duty committed to him, the amount of work accomplished being as follows, viz:

Number of miles of shore-line.....	80
Number of miles of soundings.....	1, 138
Number of square miles of hydrography.....	56
Number of square miles of topography .....	35
Number of square miles of stadia lines .....	56
Number of angles measured .....	80
Number of sounding stations built.....	290
Number of buoys placed and located.....	172
Number of lines of soundings .....	1, 507
Number of casts of the lead.....	54, 308
Number of theodolite pointings .....	6, 471
Number of theodolite readings.....	11, 847

On the return of his party all the employés were discharged, and the assistants commenced the computations and projections of the season's work, which was plotted on the scale of one sixteen-thousandth, and covered six sheets of antiquarian paper, and included 878 square inches of minute hydrography and 270 square inches of minute topography.

Assistant A. F. Chaffee, aided by Assistant J. H. Booth, was in charge of the party assigned to make the survey of the west shore of Green bay, from Menomonee southward until he met the work of Assistant O. N. Chaffee at the head of the bay. His field included the important points of Menomonee, Peshtigo, and Oconto, and several larger shoals, on the west side of the bay.

The latter part of the season he was transferred to the eastern shore, and aided Assistant Lamson in completing the work in that locality. On the 10th of October he returned to Detroit, where his party was disbanded, and the office-work commenced.

The details of the work accomplished by this party were as follows:

Number of sounding stations built.....	131
Number of buoys placed out and located.....	296
Number of lines of soundings.....	1, 606
Number of miles of soundings .....	1, 353½
Number of square miles of hydrography.....	103
Number of casts of the lead.....	84, 413
Number of miles run with stadia for topography.....	20½
Number of square miles of topography.....	24½
Number of sextant angles .....	87
Number of theodolite pointings .....	2, 687
Number of miles of shore-line run.....	68½

The office-work of this party was finished in season to resume the field operations on the opening of navigation.

Their maps were plotted on a scale of one sixteen-thousandth, covering four and a half sheets of antiquarian paper, and embracing 1,636 square inches of hydrography, and 233 square inches of minute topography.

#### LAKE SUPERIOR.

Assistant D. F. Henry, aided by Assistant E. S. Wheeler, was in charge of the party on board the steamer Search, and assigned to duty in Lake Superior, and charged with the

work of making a hydrographic survey beyond the reach of small boats, and as far into the lake as the steamer could be seen from the shore, around Keweenaw Point and westward on both sides as far as practicable; also to select a base line and points for stations for the primary triangulation of Keweenaw bay, and to reconnoitre sufficiently to determine the probability of being able to carry the triangulation across the lake.

The Search sailed for this field of duty on the 8th of May, and returned to Detroit on the 23d of October. After an extended reconnoissance and several failures, a base line was selected and marked out south of Portage entry, on the west side of Keweenaw bay. It is about 29,000 feet in length, remarkably level, and so located that the triangulation will "come off" from it with great facility and advantage. It is, however, through a dense forest, and required to be cut out and prepared throughout its entire length.

The examination of Assistant Henry demonstrated the practicability of a very extended triangulation in Lake Superior, involving lines of sight of from fifty to eighty or ninety miles in length, and led me to hope that the system could be carried over the entire lake.

In addition to the above work Assistant Henry was given the general supervision of the shore parties, keeping them supplied with provisions, and affording them such aid as was necessary when changing their camps.

On the return of the Search to this city she was laid up for the winter. The projection of work done by this party was intrusted to Assistant E. S. Wheeler, under the supervision of Assistant Henry, who was directed to turn his attention to the discussion of a portion of the meteorological data that have been collecting in the office, in which duty also he was aided by Assistant Wheeler during the latter part of the winter. His investigations promise valuable results, but as yet they are not finished, and, therefore, cannot now be presented.

The following exhibits the amount of work performed by Assistant Henry's party during the season:

Number of primary triangulation stations.....	29
Number of water stations.....	1
Number of sounding stations.....	15
Number of buoys placed and located.....	32
Number of angles measured for primary triangulation.....	46
Number of sextant angles.....	400
Number of theodolite pointings.....	2,006
Number of lines sounded with steamer.....	63
Number of lines sounded with small boats.....	145
Number of miles sounded with steamer.....	680
Number of miles sounded with small boats.....	33½
Number of casts of lead from steamer.....	446
Number of casts of lead from small boats.....	2,040
Number of square miles of hydrography, off shore.....	756
Number of square miles of hydrography, in shore.....	1
Number of miles of shore-line run.....	5
Number of miles of lines of sight cut.....	5½
Number of miles cut in locating base line.....	21
Number of miles levelled in locating base line.....	11½
Number of heights obtained by barometer.....	5
Number of miles run by steamer on general duty.....	5,444

Which work was plotted on a scale of one one-hundred-and-seventy-thousandth, and embraced eighty-seven square inches of off-shore hydrography.

Assistant Henry Gilman, aided by Assistant Lewis Foote, was directed to make a minute topographical and hydrographical survey of that portion of Lake Superior between Eagle river and Ontonagon, connecting the work of previous years at the points named.

The field assigned to this party is nearly a straight coast, a considerable portion being bold and nearly perpendicular bluffs, from thirty to seventy feet in height, without inhabitants, and where the party was for the whole season almost cut off from communication.

Occasionally a passing Indian brought them their mails in his canoe; and sometimes, when their hydrographical survey carried them far enough from shore to fall into the track of steamers, a newspaper would be thrown to them. One or two visits from the Search, for the purpose of carrying them provisions, was the only additional means of communication during the season.

This portion of Lake Superior is without harbors or places of refuge, and I was able to visit the party but once during the summer's operations, when I did so on board the steamer Search.

Assistant Gillman's party left Detroit on the 20th of May, and returned October 3, having accomplished the duty assigned them. The following are the details of their work:

Number of miles of shore-line run and sketched.....	59½
Number of square miles of minute hydrography and topography.....	97
Number of miles of lines sounded.....	773
Number of miles of topography sketched.....	34½
Number of miles of lines of sight cut.....	19½

Number of triangulation stations built.....	10
Number of sounding stations built.....	121
Number of theodolite pointings.....	3,448
Number of theodolite readings.....	5,795
Number of buoys placed out and located.....	128
Number of lines of soundings taken.....	788
Number of casts of the lead.....	28,897
Number of sextant angles.....	31
Number of compass readings for magnetic declination.....	214
Number of observations for true meridian.....	8

On the return of Assistant Gillman's party from the field the season's work was plotted, covering  $4\frac{1}{2}$  new sheets and portions of two old ones, all being on a scale of one sixteen-thousandth, with the exception of the Ontonagon sheet, which was on a scale of one five-thousandth, and that on the Eagle river sheet, which was on a scale of one ten-thousandth; the whole embracing 619 square inches of topography, and 779 square inches of minute hydrography.

Assistant J. R. Mayer, aided by Assistant J. Paul Mayer, was directed to make a minute survey of the coast-line of Keweenaw Point and Manitou islands from the outlet of Lac la Belle to Copper harbor, with the adjacent hydrography and a topographical survey of as much of Keweenaw Point as practicable. The topography was to be sketched with the aid of the stadia, which has been found most useful in the dense forests that cover almost the entire surface of the country in which we have to work, and in the use of which Assistant Mayer has had large experience and shows great skill. The work done by him during the past season with that instrument will compare favorably with any that can be done by other methods, and the time required was far less than would have been the case had the plane-table been used.

Assistant Mayer's party were absent from Detroit from the 17th of May until October 21, and in the mean time the following amount of work was accomplished:

Number of stations built for triangulation, topography, &c.....	185
Number of buoys placed and located.....	85
Number of casts of the lead.....	12,772
Number of miles of soundings.....	424
Number of theodolite angles.....	3,294
Number of vertical angles for topography.....	1,330
Number of theodolite readings.....	7,466
Number of square miles of hydrography.....	25
Number of miles of shore-line run with stadia.....	44 $\frac{1}{2}$
Number of miles of shore-line of inland lakes.....	38
Number of miles run with stadia for topography.....	123 $\frac{1}{6}$
Number of miles of line of sight cut.....	17 $\frac{1}{2}$
Number of base lines measured.....	2
Number of square miles of topography sketched.....	138 $\frac{1}{2}$

During the winter the season's work of this party was plotted on three sheets of anti-quarian paper, embracing 554 square inches of topography and 400 square inches of hydrography, of which two sheets were on a scale of one sixteen-thousandth, and one showing the topography of Keweenaw Point on a scale of one thirty-two-thousandths.

Assistant Albert Molitor, aided by Assistant A. R. Flint, was in charge of the party assigned to duty on the south side of Keweenaw Point, and instructed to commence his surveys at the outlet of Lac la Belle, connecting with the work of Assistant Mayer, and extending southward, including Traverse islands, and connecting with the surveys of previous years near Portage entry, after which he was directed to extend as far as practicable the topographical survey east of Portage lake, connecting, if possible, with the topographical survey of Assistant Mayer.

Assistant Molitor and party were in the field from May 17 till October 21, during which time the following amount of work was accomplished, viz:

Number of theodolite pointings.....	6,706
Number of theodolite readings.....	6,461
Number of compass readings.....	471
Number of readings of vertical angles for topography.....	2,950
Number of sextant angles.....	262
Number of miles of lines of soundings.....	1,164
Number of casts of the lead.....	52,984
Number of miles of shore-line.....	42 $\frac{1}{2}$
Number of buoys placed out and located.....	124
Number of stations built.....	147
Number of miles of stadia work.....	230
Number of square miles of topography.....	124
Number of square miles of hydrography.....	37 $\frac{1}{2}$



The above work was plotted on a scale of one sixteen-thousandth, covering three and a half antiquarian sheets, containing 585 square inches of topography. The map showing the topographical survey was commenced, but owing to scarcity of help in the office was not completed at the time when the party were ordered into the field to commence this season's work.

#### ASTRONOMICAL PARTY.

Assistants O. B. Wheeler and S. W. Robinson were in charge of the astronomical party for the season, and of the computations in the office.

Professor C. A. Young, of Western Reserve College, Ohio, was in the field during a portion of the season, and observed at some of the points.

The position of Fort Howard, both as to latitude and longitude, having been carefully determined in the summer of 1864 by observations with the zenith telescope for latitude, and by telegraphic connection with the lake survey observatory in Detroit, and the observatory of the University of Michigan, at Ann Arbor, for longitude, instructions were given to make that the initial point for the work of the season of 1865.

The telegraph had in the interim been carried from Fort Howard to Marquette, in Lake Superior. The use of it was freely granted to the survey by the officers of the company. I therefore directed the observatory to be re-established at Fort Howard, and the connection to be carried by means of the transmission of telegraphic signals for differences of longitude from that point to Marquette, and also that intermediate points should be occupied at Menomonee and Escanaba; also that the difference of longitude between Marquette and Mount Houghton, on Keweenaw Point, should be determined by simultaneous observations of signal flashes of gunpowder, and that the latitude should be observed for at the points named, and at the head of Big Bay de Noquette, the mouth of Cedar river, Fish Dam, Washington island, and Door bluff, in the north end of Green bay.

The important duty assigned to this party was faithfully and satisfactorily performed. The report of Assistant Wheeler, giving the details of the work, will be found herewith, marked Appendix A.

#### SPECIAL SURVEYS.

By direction of the bureau, special surveys have been made at the following points, viz:

Erie, Ohio; Ashtabula, Ohio; Cleveland, Ohio; Chicago, Illinois; Sheboygan, Wisconsin; St. Joseph, Michigan; Conneaut, Ohio; Grand River, Ohio; Black River, Ohio; Racine, Wisconsin; Grand Haven, Michigan.

The above surveys have been projected and drawn as follows:

Two maps of Erie, on a scale of one eight-thousandth and one twenty-four-thousandth, respectively.

One map of Conneaut, on a scale of one five-thousandth.

One map of Ashtabula, on a scale of one five-thousandth.

One map of Grand River, on a scale of one five-thousandth.

One map of Cleveland, on a scale of one five-thousandth.

One map of Black River, on a scale of one five-thousandth.

Two maps of Chicago, on a scale of one six-thousandth and one thirty-six-thousandth, respectively.

One map of Racine, on a scale of one forty-eight-thousandth.

One map of Sheboygan, on a scale of one five-thousandth.

One map of Grand Haven, on a scale of one twenty-four-thousandth.

One map of St. Joseph, on a scale of one five-thousandth.

Copies of maps of the following points were, by direction of the Engineer bureau, furnished to Colonel T. J. Cram, corps of engineers:

Erie, Ohio; Ashtabula, Ohio; Cleveland, Ohio; Conneaut, Ohio; Grand River, Ohio; Black River, Ohio.

Copies of the following have been furnished Major J. B. Wheeler, corps of engineers:

Grand River; Racine; Sheboygan.

One copy of the map of Erie was, by direction, forwarded to the Engineer bureau; one of the same to the Light-house Board; one copy of the detail map of Erie was, by authority of the department, furnished to J. Edgar Thompson, esq., president of the Philadelphia and Erie Railroad Company; and one copy of map of Grand River to G. E. Paine, esq., Painesville, Ohio.

#### OFFICE-WORK.

In addition to the computation and projection required by the field-work of the season, the details of which have been given for each party, the work of reducing and tabulating the meteorological records, at the thirteen points at which observations are made for the survey, is carried on throughout the year by Assistant J. M. Bigelow, aided by two copyists, and Assistants Clagur and Wright, during such portions of their time as are not occupied with my accounts and the current business of the office. His report, with accompanying tables and data, will be found herewith, marked, Appendix B.



## CHART REDUCTION.

The field-work of the parties is, as a rule, projected to the scale of one sixteen-thousandth or very nearly four inches to one mile. This scale has been long in use on the survey, and is found convenient for much the greater part of the maps in detail. It is only deviated from when a particular locality requires more minute detail, or where it is desirable to include in one map a larger field than can be put upon a single sheet of antiquarian paper, larger sheets being difficult to preserve and inconvenient for use.

These sheets are carefully reduced in the office to the proper scale for publication, and the final maps forwarded to the bureau need only to be copied by the engraver.

The following is a list of the charts heretofore prepared in this office, which have been published:

Lake Erie; Kelly's and Bass islands; west end of Lake Erie; straits of Mackinac; east Neebish rapids; Saginaw river; Buffalo harbor; Beaver group; Agate harbor; river St. Marie No. 2; Eagle river; Saginaw bay; Marquette harbor; Lake Huron; Grand island; Grand and Little Traverse bays; head of Green bay; St. Clair flats; Tawas harbor; Eagle harbor; river St. Marie No. 1; Maumee bay; Ontonagon harbor; Thunder bay; Presque Isle and Middle island; south end Lake Huron; west end Lake Superior; north end of Green bay.

The following charts are now in the hands of the engraver:

Portage lake; L'Anse or head of Keweenaw bay; north end of Green bay.

A chart of the north end of Lake Michigan, including the eastern portion of the straits of Mackinac, all the islands in the lake, Grand and Little Traverse bays, Big and Little bays De Noquette, and the whole of Green bay, is now being prepared by Assistant J. U. Müller, on a scale of one four-hundred-thousandth. It is one of his finest specimens of drawing, and the chart covers a field as important as any in the entire lake region. It requires time to produce such a work, and I doubt its being ready to put into the hands of the engraver before the coming spring or early summer months.

A map more in detail is also being prepared of the southern portion of Green bay from the entrance of the bay to the mouth of Fox river. This chart is on a scale of one one-hundred-and-twenty-thousandth, and will correspond in style with the charts heretofore published on that scale. The preparation of this chart was delayed for several months by the protracted illness, ending in the entire disability of Assistant Joshua Barney, who for eight years was employed on the survey, and has spent the greater part of his life in the service of the government. I need hardly say that his loss is a serious one to the survey, as well as a matter of personal regret to myself.

Mr. Edward Molitor was employed on the 1st of May last to fill the place made vacant by the resignation of Assistant Barney, and the map of Green bay above referred to is being prepared by him. It will probably be ready to put into the hands of the engraver about the 1st of January next.

The data for the following maps, in addition to those named as now in progress, are now in the office, or will be at the close of the present season's operations: Big and Little Sturgeon bays, in Green bay; Huron bay and islands, in Lake Superior; the south shore of Lake Superior, from Ontonagon to Marquette, including Keweenaw Point and Stannard's Rock.

The reduction and projection of these maps will be commenced as soon as the draughtsmen have completed the work now in hand.

## CHART DISTRIBUTION.

The lake survey charts as they are published are distributed gratuitously to vessels whenever called for, either at this office or at an office which has been established for the purpose in Buffalo.

The regulations that have governed this portion of our duties prescribe that an entire set of charts may be given to each vessel, not to the owner or master, and the express stipulation is made that they will not be duplicated, "unless a satisfactory reason can be given for their loss."

I desire again, as I have in previous reports, to call the attention of the bureau to the difficulty of deciding in many cases what are "satisfactory reasons," and to the fact that no provision is made for furnishing the charts to many parties who need them.

Insurance companies have been occasionally supplied by special orders from the department. But there are many others who would be glad to have them—vessel owners, forwarders, lawyers engaged in admiralty suits, schools, libraries, &c., &c.—to whom we have no authority to issue. Especial provision is made for such cases in issuing the charts of the coast survey, as also for selling them at the cost of paper and printing, and I have most respectfully but urgently to recommend that like provision may be made for the distribution of the charts of the lake survey.

A careful record is kept of all the charts issued here and at Buffalo, and copies of these records exchanged monthly. When application for charts is made the records are examined, and if the vessel has been once supplied, duplicates, excepting in rare cases, are refused.

The demand for charts continues unabated, and their value is becoming more and more appreciated. A tabular statement of distributions made during the year, and the total number distributed prior to July 1, 1866, is herewith submitted, marked Appendix C.

## BASE LINE.

The base line selected in the fall of 1865 on the west side of Keweenaw bay, south of Portage entry, was cut out during the past winter to the width of fifty feet throughout its entire length. All the stumps and roots were removed for a width of fifteen feet, which width was also ploughed to prevent the unfavorable effect of small roots that could not otherwise be got rid of, and the whole line prepared for measuring by parties who did the work at an entire cost of eighty-six cents per running yard. This method of doing the work was pursued not only from motives of economy, for it was found that previous lines not more unfavorably situated cost a greater sum by days' works, but for the reason that the winter is the most favorable season for the work.

It is the intention, if the latter part of the season is favorable, to have this line measured with the base apparatus this fall.

## NEW STEAMER.

A new steamer, for general service on the survey, reached Detroit in October last. It had been purchased from the Navy Department, and was one of the many vessels captured from the rebels, was built on the Clyde, and intended, originally, as a blockade runner. She did not possess the requisite accommodations for a surveying party, who were expected to use her as an office while in the field, and to make computations and drawings on board. The erection of a new cabin and upper works became, therefore, a necessity. The changes and modifications required upon her were commenced in December, but owing to the scarcity of mechanics the work progressed very slowly, and it was not until the month of June that she was ready to sail, when she was ordered at once to her duties in Lake Michigan, where she has since done good service.

## TEST OF RELATIVE MERITS OF INSTRUMENTS.

As soon as it was known that the triangulation of Lake Superior could possibly be carried over the greater part of the lake, and involved lines of sight of extraordinary length, I at once saw that the instruments belonging to the survey were not such as were required for such a work, and that it would be economy to have enough instruments to occupy at least three points at the same time, for the double purpose of making the best use of the small proportion of favorable weather for such purposes that obtains during the season, and of reading the angles simultaneously. I was anxious at the same time not to ask for anything that was not strictly necessary. After careful consideration, and knowing the excellence of the work that could be done with the best instruments on the survey, (a 10 inch Gambey repeating theodolite, reading by two verniers to five seconds,) I made requisition on the bureau, on the 6th of September, 1865, for three 12-inch theodolites, by the same maker. Before filling the requisition the bureau directed me to make a careful comparison of the relative merits of theodolites by different makers. This duty I intrusted to Assistants D. M. Henry and O. N. Chaffee, who performed it to my entire satisfaction. The result of their investigation will be found in their report, which is herewith again submitted as Appendix D. Under date of March 15, 1866, I was informed by the bureau that the instruments would be ordered from the establishments of Berlin and Munich. I have received no further information in regard to these instruments, and can only express the hope that they may be received in time for next season's work.

## FIELD DUTY OF 1866.

## LAKE MICHIGAN.

The several assistants having finished their respective office duties, about the 1st of April preparations were made for resuming operations in the field. The unusual amount of ice in Lake Superior caused a late opening of navigation, and consequently somewhat delayed the getting off of the parties. They left this city in the following order:

Assistant A. F. Chaffee sailed May 19, on board the steamer City of Buffalo, for Frankfort, on the east side of Lake Michigan, under orders to commence work at Point Aux-Becs-Scies, where previous surveys ended, and work to the southward, if possible as far as Little Point au Sable. I visited this party in the field about the middle of August, at which time they were at "Free Soil," about eight miles above Great Point au Sable, and were making good progress. At last dates from Assistant Chaffee, his work was approaching completion, and it was probable that he would be able, before the close of the season, to transfer his party to the west shore, and assist in carrying on the surveys on that side of the lake as far south as it will be on the eastern shore.

Assistant Henry Gillman sailed with his party on the 25th of May, on board the steamer Oregon, which landed him at White Fish bay, on the west side of Lake Michigan.

He was under orders to take up the survey of that side of the lake at the most southern point reached by previous surveys, which was near Bailey's harbor, and to continue the work, embracing the coast, with adjacent hydrography and topography, as far to the southward as practicable.

I visited this party on the 14th of August, at which time they were about moving their camp to Kewance, where they were at last reports, and I have every reason to believe that they will accomplish a good season's work.

Assistant O. N. Chaffee is in charge of the party on board the new steamer, and his field of duty is in the north end of Lake Michigan.

Owing to the delays heretofore mentioned, this party did not start for the field until the 28th of June.

The instructions given Assistant Chaffee were to carry the primary triangulation of Lake Michigan as far to the southward as possible, then to determine the azimuths between the headlands as far to the southward on both sides of the lake as the shore-line could be surveyed during the present season, it being the intention to determine the latitude of these azimuth stations, and to depend upon latitude and azimuth for checks upon the work. - This is the method that was adopted for the survey of Lake Huron, and is the best that can be pursued where triangulation is impracticable, and in cases like that of Lake Michigan, where the direction of the coast is nearly north and south, the results are better than could be arrived at by an indifferent triangulation.

Assistant Chaffee was also directed to make a hydrographical survey of the northern portion of the lake, beyond the reach of small boats, in the same manner that has heretofore been pursued in other localities.

Notwithstanding the delay in getting into the field, it is hoped that the party will be able to accomplish the duty assigned to them.

#### LAKE SUPERIOR.

First Lieutenant M. R. Brown was assigned to the charge of the astronomical party in Lake Superior during the present season. He was directed to divide his party into three sections, placing two of them under charge of Assistants O. B. Wheeler and S. W. Robinson, and to station the different sections at the vertices of the large triangles, and to observe for latitude with the differential zenith telescope, and for difference of local time by observations of instantaneous signals to be made at suitable points, and to read the angles of the triangles with the best instruments that could be furnished him, (the instruments ordered from Europe for this triangulation not having arrived.)

The first triangle selected was "Vulcan," "St. Ignace," and "Northeast," Vulcan station being in the vicinity of Vulcan mine, not far from the extremity of Keweenaw Point. The point selected was in a dense forest, and required a station seventy-five feet in height to enable him to get a clear view of the horizon above the trees. The instrument stands at this station eight hundred feet above the lake surface.

St. Ignace station is on St. Ignace island and nearly north of Vulcan station. The instrument here stands twelve hundred and ninety-nine feet above the lake.

Northeast station is upon the high ground north of Otter cove, in the northeastern part of the lake. The instrument stand is here nine hundred and forty-five feet above the lake surface.

The latitude of each of these stations has been determined, and computing the length of the line Vulcan—St. Ignace by difference of latitude, and using that as a base, I have determined the approximate distance between Vulcan and St. Ignace to be ninety-five miles, between St. Ignace and Northeast, eighty-nine miles, and between Vulcan and Northeast, ninety-six and three-tenths miles.

It will be observed that the stations Vulcan and Northeast, from the data above given, would not be visible one from the other with the refraction that is usually assumed, but signals have been seen both ways, and the angles approximately determined, and it is believed that, with the aid of calcium or magnesium lights, the angles can be read with accuracy.

Lieutenant Brown will occupy several other stations, and read the angles of triangles having sides from fifty to seventy-five miles in length; but the points are all in distinct views, and little or no difficulty is anticipated, the triangle above described being the one that seems most doubtful.

Lieutenant J. F. Gregory reported for duty on the 2d of July, and was at once sent into the field, at first with Lieutenant Brown, and subsequently was instructed to read the angles of the triangulation of Keweenaw bay, using for this purpose the steamer Search to convey him between stations.

Assistant D. F. Henry was assigned to the charge of the party on board the steamer Search, and was directed to resume the reconnoissance for points of primary triangulation, to build stations, to sound lines across the lake, and to make surveys of distant shoals, and to aid the astronomical parties by landing them at the points to be occupied, keeping them supplied with provisions, &c. He continued upon this work until after my visit to Lake Superior, when I gave him instructions to measure the base line, which duty was commenced about the 1st of September, and the steamer Search turned over to Lieutenant Gregory for the triangulation of Keweenaw bay. It is hoped that if the weather is favorable Assistant Henry will be able to complete the measurement of the base line the present season.

Assistant A. C. Lamson was assigned to the charge of the party on board the steamer

Surveyor, and was directed to build stations for primary triangulation at points selected last season, and cut out lines of sight, and also to make a hydrographical survey of Keweenaw bay, and to the eastward along the south shore of Lake Superior as far as practicable. When I visited him last he was making good progress, with every prospect of completing the work assigned to him.

Assistants J. R. Mayer and Albert Molitor, aided respectively by Assistants J. Payl Mayer and F. M. Towar, are in charge of the only topographical parties in Lake Superior. The field of duty assigned to them was between Marquette on the east and near the head of Keweenaw bay on the west.

This portion of the coast is on the route of vessels plying between the important copper interests on Portage lake and the iron district about Marquette. Huron islands, Granite island, and Middle island are in this field, as is also the important arm of the lake known as Huron bay, stretching inland some fifteen miles.

Assistant Mayer was ordered to commence at the western portion of the field, and Assistant Molitor at the eastern, and the instructions given them were to continue their work until they met.

On my visit to these parties in August I found they had made good progress, and that the work assigned to them would easily be accomplished. I therefore gave instructions to Assistant Molitor to transfer his party to the base line to aid Assistant Henry in his measurements of the same, and having done so, to return to Detroit himself, for the purpose of making a survey that had been ordered by the bureau at the mouth of Au Sable river, in Lake Huron. I also instructed Assistant Mayer, should he have time after joining his work with that of Assistant Molitor, to transfer his party to the east of Marquette, and continue the survey of the shore-line, with adjacent topography and hydrography, as far to the eastward as possible.

It will be seen from the above brief outline of the duties of the survey that there is every reason to hope that the work assigned to the several parties for the present season will be entirely finished by them before their return from the field.

#### FUTURE OPERATIONS.

The rapidly increasing commerce of Lake Superior calls, in my opinion, for the completion of the survey of that lake before commencing in any other field. The present season's work will complete the continuous survey of the shore-line, with adjacent hydrography and topography, from west of Ontonagon to east of Marquette, as well as the off-shore hydrography over the greater portion of the same field; and it is hoped that a large portion of the primary triangulation, and also the determination by astronomical observation of the positions of six or seven points—apices of the large system of triangulation that extends across the lake.

The angles of these large triangles will only be determined approximately, owing to the non-arrival of the instruments asked for in September last, as well as to our not having the appliances for reading them at night, the experience of the present season having demonstrated this to be the best time and method of doing so.

In the discussion of the question of continuing the survey of Lake Superior, the only question that arises is as to whether the work shall be continued to the east or to the west of our present field.

The survey of Lake Huron and the greater part of the St. Mary's river having been completed, there can be little doubt as to the propriety of selecting the eastern field, and thus making the surveys continuous from the foot of Lake Huron as far westward as Ontonagon. It is believed that this can be done by three shore parties and two steamers, leaving one steamer and such additional shore parties as may be organized for the coming season available for duty elsewhere. This additional force should be assigned to duty on Ile Royale, for the purpose of advancing the survey in that important locality.

The astronomical and primary triangulation parties should reoccupy most of the points at which they have been stationed the present season, and with the aid of the better instruments that have been ordered, and the requisite appliances for lighting the stations, read carefully the angles of the large triangles extending entirely across the lake.

#### ESTIMATES.

I have the honor to submit herewith estimates for continuing the survey for the fiscal year ending June 30, 1868, on the same scale and general plan that has heretofore been adopted.

Very respectfully, your obedient servant,

W. F. RAYNOLDS,  
*Brevet Colonel and Major of Engineers.*

Brevet Maj. Gen. A. A. HUMPHREYS,  
*Chief Engineer U. S. Army.*



*Recapitulation of the annual report of the survey of the northern and north-western lakes for the year ending June 30, 1866.*

Two steamers, five shore parties, and an astronomical party, divided into two sections, were employed in the field during the season of 1865. One steamer and two shore parties were stationed in Green bay, and one steamer and three shore parties in Lake Superior.

The astronomical party was stationed in both fields of operations, and made the connection between Green bay and Lake Superior by transmission of telegraphic signals for difference of longitude, and observed at six points in Green bay, and two in Lake Superior for latitude.

The survey of Green bay, throughout its entire extent, has been finished, and the primary triangulation connected with that in the north end of Lake Michigan and the Straits of Mackinac.

The details of the work in Green bay for the season of 1865 are as follows :

Number of primary triangulation stations built.....	15
Number of water stations placed on dangerous shoals.....	3
Number of sounding stations built.....	511
Number of buoys placed and located.....	336
Number of angles measured for primary triangulation.....	143
Number of angles measured for secondary triangulation.....	80
Number of sextant angles.....	887
Number of theodolite pointings.....	17,266
Number of compass readings for magnetic declination.....	34
Number of lines sounded with steamer.....	128
Number of lines sounded with small boats.....	3,602
Number of miles sounded with steamer.....	906
Number of miles sounded with small-boats.....	2,884
Number of casts of lead from steamer.....	2,058
Number of casts of lead from small-boats.....	166,996
Number of square miles of hydrography, off-shore.....	444
Number of square miles of hydrography, in-shore.....	184
Number of square miles run with stadia for topography.....	134
Number of square miles of topography.....	744
Number of miles of shore-line run.....	1904
Number of miles run by steamer on general duty.....	2,492

The above work was plotted during the winter on 14½ sheets of antiquarian paper, two of which were on a scale of one sixty-thousandth, and the remainder on a scale of one sixteen-thousandth, embracing 3,590 square inches of minute hydrography, and 949 square inches of minute topography.

In Lake Superior the shore-line was surveyed from Ontonagon to the Methodist mission in L'Anse bay. The off-shore sounding around Keweenaw Point and Manitou island was completed, and the topography of a large portion of Keweenaw Point minutely surveyed.

The details of the work in Lake Superior last season are as follows, viz :

Number of primary triangulation stations built.....	19
Number of secondary triangulation stations built.....	105
Number of water stations built.....	1
Number of sounding stations built.....	373
Number of buoys placed out and located.....	369
Number of angles measured for primary triangulation.....	46
Number of sextant angles.....	693
Number of theodolite pointings.....	15,454
Number of vertical angles for topography.....	4,280
Number of compass angles for magnetic declination.....	685
Number of lines sounded with steamer.....	63
Number of lines sounded with small boats.....	933
Number of miles sounded with steamer.....	680
Number of miles sounded with small boats.....	2,394
Number of casts of lead from steamer.....	446
Number of casts of lead from small boats.....	96,693
Number of square miles of hydrography, off-shore.....	756
Number of square miles of hydrography, in-shore.....	115½
Number of miles run with stadia for topography.....	387½
Number of square miles of topography.....	307½
Number of miles of shore line run.....	151
Number of miles of shore-line run in inland lakes.....	38
Number of miles of lines of sight cut.....	42½
Number of miles cut in locating base line.....	21
Number of miles levelled in locating base line.....	11½
Number of heights measured by barometer.....	5
Number of miles run by steamer on general duty.....	5,444

The above work was plotted during the winter on 12 sheets of antiquarian paper, one of which was on a scale of one one-hundred-and-seventy-thousandth; of the remainder, one was on a scale of one thirty-two-thousandth, and ten on a scale of one sixteen-thousandth, the whole embracing 1,323 square inches of topography, 1,764 square inches of minute hydrography, and 87 square inches of off-shore hydrography.

The total amount of work accomplished during the season was as follows:

Number of primary triangulation stations.....	34
Number of secondary triangulation stations.....	105
Number of water stations.....	4
Number of sounding stations.....	884
Number of buoys placed and located.....	905
Number of angles measured for primary triangulation.....	189
Number of angles measured for secondary triangulation.....	80
Number of sextant angles.....	1,580
Number of theodolite pointings.....	32,720
Number of vertical angles for topography.....	4,280
Number of compass angles for magnetic declination.....	719
Number of lines sounded with steamers.....	191
Number of lines sounded with small boats.....	4,535
Number of miles sounded with steamers.....	1,586
Number of miles sounded with small boats.....	5,278
Number of casts of lead from steamers.....	2,504
Number of casts of lead from small boats.....	263,688
Number of square miles of hydrography, off shore.....	1,200
Number of square miles of hydrography, in shore.....	299 <sup>3</sup> / <sub>10</sub>
Number of miles run with stadia for topography.....	521 <sup>5</sup> / <sub>8</sub>
Number of square miles of topography.....	331 <sup>7</sup> / <sub>8</sub>
Number of miles of shore-line run.....	201
Number of miles of shore-line of inland lakes run.....	38
Number of miles cut in locating base line.....	21
Number of miles levelled in locating base line.....	11 <sup>1</sup> / <sub>4</sub>
Number of heights obtained by barometer.....	5
Number of miles run by steamers on general duty.....	7,936
Number of miles of lines of sight cut.....	42 <sup>1</sup> / <sub>4</sub>

Which work has been plotted on 22<sup>1</sup>/<sub>4</sub> sheets of antiquarian paper on a scale of one sixteen thousandth, on one sheet on a scale of one thirty-two-thousandth, two sheets on a scale of one sixty-thousandth, and one sheet on a scale of one one-hundred-and-seventy-thousandth. The whole embracing 5,441 square inches of hydrography and 3,272 square inches of topography.

Special surveys were made of eleven harbors in lakes Erie and Michigan, maps of which were made showing the details of piers, &c., and furnished to engineers in charge of harbor improvements.

During the present season two steamers and two shore parties have been at work in Lake Superior. Their field of operations was confined to that portion of the lake between Manitou island and Marquette.

Astronomical and trigonometrical parties have been stationed on the north shore, Ile Royale, and Keweenaw Point, and a connection made across the lake.

One steamer and two shore parties have been engaged in Lake Michigan, and it is hoped to carry the surveys in that lake as far south as Little Point Sable on the eastern, and the vicinity of Manitowoc on the western side.

Twenty-eight charts of lakes have already been published.

Three charts are now in the hands of the engraver.

Two charts are now being reduced for publication.

Copies of the lake-survey charts have been distributed, of which 2,916 were distributed during the past year.

Total estimates for the year ending June 30, 1868, \$153,166 75.

Respectfully submitted:

W. F. RAYNOLDS,  
*Brevet Colonel and Major of Engineers.*

*Estimate for continuing the survey of the north and northwest lakes, including Lake Superior, for the fiscal year to commence July 1, 1867, and ending June 30, 1868.*

For three parties for hydrographical and general triangulation reconnoissance, one for each of the lake survey steamers, "Search," "Surveyor," and "Little Ada;" the cost of each of these parties will be as follows, viz:



1 assistant, 183 days at \$4 per day.....	\$732 00
1 assistant, 183 days at \$3 per day.....	549 00
1 assistant, 183 days at \$2 50 per day.....	457 50
1 recorder of soundings, 183 days at \$1 25 per day.....	228 75
1 sailingmaster, 183 days at \$2 75 per day.....	503 25
1 mate, 6 months at \$50 per month.....	300 00
1 steam engineer, 183 days at \$2 50 per day.....	457 50
1 assistant steam engineer, 183 days at \$1 50 per day.....	274 50
1 carpenter, 183 days at \$2 per day.....	366 00
1 steward, 183 days at \$1 50 per day.....	274 50
1 cook, 183 days at \$1 50 per day.....	274 50
1 second cook, 183 days at \$1 per day.....	183 00
4 firemen, 183 days at \$1 25 per day.....	915 00
14 seamen, 183 days at \$1 per day.....	2,562 00
Subsistence for the above 30 persons 183, days at 50 cents each.....	2,745 00
550 tons of coal for fuel, at \$10 per ton.....	5,500 00

Total for one hydrographical party..... 16,322 50

For three parties..... \$48,967 50

For three astronomical, magnetic, and primary triangulation parties, as follows:

1 assistant, 183 days at \$4 per day.....	\$732 00
1 assistant, 183 days at \$3 per day.....	549 00
2 recorders, 183 days at \$1 25 per day.....	457 50
1 carpenter, for building observatories, stations, &c., 150 days at \$2 per day.....	300 00
1 steward, 150 days at \$1 50 per day.....	225 00
1 cook, 150 days at \$1 50 per day.....	225 00
5 men for boats' crews and laborers, 150 days at 90 cents per day..	675 00
Expense of moving parties, provisions, camp equipage, &c., to and from the field.....	600 00
Subsistence of 12 men, 150 days at 50 cents per day.....	900 00

Total for one party, 150 days..... 4,663 50

For three parties..... 13,990 50

For five topographical and hydrographical parties to survey shore-line, and adjacent topography and hydrography, the cost of each party will be as follows:

1 assistant, 183 days at \$4 per day.....	\$732 00
1 assistant, 183 days at \$3 per day.....	549 00
1 assistant, 183 days at \$2 per day.....	366 00
1 foreman, 165 days at \$1 50 per day.....	247 50
1 steward, 165 days at \$1 50 per day.....	247 50
1 cook, 165 days at \$1 50 per day.....	247 50
1 waiter, 165 days at \$1 per day.....	165 00
2 leadsmen, 165 days at \$1 25 per day.....	412 50
2 chainmen, 165 days at \$1 per day.....	330 00
14 boatmen, 165 days at 90 cents per day.....	2,079 00
Subsistence of above 25 men, 165 days at 50 cents per day.....	2,062 50
Expenses in purchase of tools, buoy-flags, rope-leads, lead-lines, and materials for stations, camp and mess equipage, &c.....	600 00
Transportation of 25 men to and from the field, at \$20 each each way,	1,000 00
Expense of moving provisions, camp equipage, &c., each way \$250	500 00

Total for one party..... 9,538 50

For five parties..... 47,692 50

#### OFFICE AND MISCELLANEOUS EXPENSES.

Office rent and fuel for one year.....	\$1,800 00
Pay of two draughtsmen for reducing maps for engraving, one year of 365 days, at \$4 each per day.....	2,920 00
computer, 365 days at \$4 per day.....	1,460 00
assistant heads of parties, 182 days at \$4 each.....	5,096 00
assistants, 182 days at \$3 each.....	3,822 00
copyists and recorders, 182 days at \$2 each.....	2,184 00
assistant in meteorological department, 365 days at \$4.....	1,460 00
steamers in ordinary, at \$1,000 each.....	3,000 00

Commutation of fuel and quarters of superintendent of lake survey and two assistants.....	\$1,500 00
Travelling expenses of superintendent and assistants while attending to duties of the survey.....	750 00
Expenses in office, drawing-paper and materials, stationery, purchase of Nautical Almanacs, &c.....	600 00
Expense of meteorological and tide-gauge observers for one year...	4,000 00
	<hr/>
Total estimate for office and miscellaneous expenses.....	\$28,592 00
Add ten per cent. to cover contingent expenses, such as purchase of tents, boats, camp equipage, &c.....	13,924 25
	<hr/>
Total estimate.....	153,166 75
Respectfully submitted:	

W. F. RAYNOLDS,  
*Brevet Colonel and Major of Engineers.*

#### APPENDIX A.

##### OFFICE UNITED STATES LAKE SURVEY, *Detroit, May 31, 1866.*

SIR: In compliance with your instructions I have the honor to submit the following report of the operations in the astronomical department of the lake survey, since the date of the last annual report. The several operations are arranged in the following order:

First. Tables showing the results of observations for difference of longitude between Escanaba and Marquette, Michigan, by the telegraphic method.

Tables from No. 1 to No. 3, inclusive, contain the general results and final result for the differences of longitude. The observers in this connection were Mr. S. W. Robinson, assisted by Mr. Alex. Thomson, and myself, assisted by Mr. William Donovan. Table No. 1 shows the order in which the stations were occupied, and the clock used at either station. At Escanaba the Würdemann transit No. 15 was used, and at Marquette the Würdemann transit No. 1.

Second. Tables showing the results of observations for differences of longitude between Escanaba and Menomonee, Michigan, and Fort Howard, Wisconsin, by the telegraphic method.

Tables from No. 4 to No. 8, inclusive, contain the general results and final results for the difference of longitude. The observers in this connection were, at Escanaba, Professor C. A. Young and myself, assisted by Mr. Donovan; at Menomonee, Assistant Robinson, assisted by Mr. Thomson, and at Fort Howard, Professor Young and myself, assisted by Mr. George S. Wisner. Table No. 4 shows the order in which the stations were occupied. The instruments at Escanaba were continued as above, and those used at Marquette were transferred to Fort Howard. At Menomonee the transit prime vertical and zenith telescope combined, made by Pistor & Martin, Berlin, was used. The focal length of its telescope is twenty-four inches.

Third. Tables showing the results for latitude of the six stations in Green bay at which observations were made last season, namely: Escanaba, Menomonee, Fishdam, Boyer's Bluff, Door Bluff, and Cedar River.

Tables from No. 9 to No. 14 contain the general results and final results for latitude; only such observations as were marked at the time as doubtful, or where there is evidence that at least one of the stars was poorly determined in declination, have been rejected. At Escanaba the observations of July 25 were made by Assistant Robinson; only four results from these observations have been rejected. The remaining observations were made by myself, and of the results none have been rejected. The Würdemann zenith telescope No. 12 was used at this station. At Menomonee the observations were made by Assistant Robinson, with the Pistor & Martin instrument, and of the results seventeen were rejected. At Fishdam the observations were made by myself, with zenith telescope No. 12, and of the results none were rejected. At Boyer's Bluff the observations were made by Professor Young, with the Pistor & Martin instrument. Several results were rejected on account of a doubtful record. It is due Professor Young to state that he had an inexperienced recorder at this station. At Door Bluff and Cedar River the observations were made by Assistant Robinson, with the Würdemann zenith telescope No. 1. At the former station three results have been rejected; at the latter none.

Fourth. Table No. 15 contains the latitude and longitude, west of Greenwich, of primary triangulation stations so far as determined by astronomical observations. It is thought best to retain the longitude of Cambridge, Massachusetts, as given in the last annual report, that is —  $4^h 44^m 30^s.66 \pm 0^s.20$ , as still most authentic, although a less value may yet be adopted. The longitude of Fort Howard from Cambridge, as determined last year, is  $1^h 07^m 32^s.74 \pm 0^s.034$ .

The preparations and mode of procedure usual in making observations for difference of longitude by the telegraphic method and explained more at length in the last annual report, and the same method of reduction as there explained, have been adhered to in the above longitude operations.

Instead, however, of applying any value for personal equation, it was sought to eliminate this by an interchange of observers. The result, however, for the longitude of Menomonee, at which Assistant Robinson made all the observations, is still uncorrected, but it is believed that the correction would not exceed 0s.01, or about one-half the personal equation, as formerly obtained, between Professor Young and Assistant Robinson, since the equation between Assistant Robinson and myself is about zero. It will be noticed that the results for August 16, in table No. 6, and for August 22, in tables Nos. 5 and 6, are somewhat discrepant with the other results. It is thought that this may possibly be due to a change of personal equation owing to the state of health of the observers. On the former night I was entirely too ill to make reliable observations, and on the latter Assistant Robinson was ill. The nature of our diseases was entirely different, and such as to suggest that I would observe later while Assistant R. would observe earlier than ordinary.

The apparent change of rate in the Marquette clock between July 22 and 27 and July 27 and 29, in table No. 1, and in the Escanaba clock, between August 12 and 14, in table No. 4, is due to the pendulum being disturbed in removing or replacing shot to regulate the clock. As the rate from one day to another was not relied upon in the reductions, these irregularities do not interfere with the accuracy of the work.

In the reductions at the office I have been aided by Assistants Robinson and Wisner.

Very respectfully, your obedient servant,

O. B. WHEELER, *Assistant Lake Survey.*

Colonel W. F. RAYNOLDS,  
*Superintendent U. S. Lake Survey.*

TABLE No. 1.—*Error of clocks at Escanaba and Marquette, Michigan.—General results.*

Date.	Error of Escanaba clock, (No. 184, B. & S.)				Error of Marquette clock, (No. 256, B. & S.)			
	No. of ob- servations.	Clock error.	Probable error of—		No. of ob- servations.	Clock error.	Probable error of—	
			Single result	Final result.			Single result	Final result.
	S. W. ROBINSON, Observer.				O. B. WHEELER, Observer.			
1865.		m. s.	s.	s.		m. s.	s.	s.
July 20.....	42	+0 2.719	± 0.067	± 0.010	45	+0 6.014	± 0.055	± 0.008
21.....	36	+0 1.294	± 0.074	± 0.011	40	+0 6.332	± 0.046	± 0.007
22.....	31	—0 0.023	± 0.054	± 0.010	31	+0 6.885	± 0.069	± 0.012
	O. B. WHEELER, Observer.				S. W. ROBINSON, Observer.			
27.....	40	—0 5.011	± 0.060	± 0.009	43	+0 11.177	± 0.054	± 0.008
29.....	46.	—0 6.323	± 0.076	± 0.011	48	+0 10.674	± 0.050	± 0.008
31.....	43	—0 9.238	± 0.059	± 0.009	42	+0 11.234	± 0.062	± 0.009

TABLE No. 2.—*Difference of longitude between Escanaba and Marquette, Michigan.— General results.*

Date.	Escanaba record.		Marquette record.		Mean result.	Probable error of—	
	No. of obser- vations.	Results.	No. of obser- vations.	Results.		Single re- sult.	Final re- sult.
186		m. s.		m. s.			
July 20.....	46	1 35.244	46	1 35.246	1 35.245	± 0.077	± 0.012
21.....	42	35.228	42	35.204	35.216	0.079	0.012
22.....	33	35.191	33	35.191	35.191	0.080	0.014
27.....	42	35.218	42	35.215	35.216	0.063	0.009
29.....	55	35.276	55	35.273	35.274	0.068	0.009
30.....	51	35.211	51	35.209	35.210	0.079	0.011

TABLE No. 3.—*Final result, Escanaba and Marquette*

Date.	Result of each night.	Difference from mean.	Probable error.	Weight.	Weight × result.	No. of observations.
1865.	<i>m. s.</i>					
July 20.....	1 35.245	−0.015	±0.012	0.69	.170	46
21.....	35.216	+0.014	0.012	0.69	.150	42
22.....	35.191	+0.039	0.014	0.51	.097	33
27.....	35.216	+0.014	0.009	1.24	.267	42
29.....	35.274	−0.044	0.009	1.24	.339	55
30.....	35.210	+0.020	0.011	0.83	.174	51
Sums .....				5.20	1.197	269
Final result = 1 <i>m.</i> 35 <i>s.</i> 230 ± 0 <i>s.</i> 005.						

TABLE No. 4.—*Errors of clock (No. 184, B. & S.) from observations at Escanaba, Menomonee, and Fort Howard.—General results.*

Date.	By Escanaba observations.				By Menomonee observations.				By Fort Howard observations.				
	No. of obs.	Clock errors.	Prob. error of—		No. of obs.	Clock errors.	Prob. error of—		No. of obs.	Clock errors.	Prob. error of—		
			Single result.	Final result.			Single result.	Final result.			Single result.	Final result.	
1865. Aug. 11 12 14	O. B. WHEELER, Observer.				S. W. ROBINSON, Observer.				Prof. C. A. YOUNG, Observer.				
	43	m. s. —0 18.623	s. ±0.060	s. ±0.009	38	m. s. ±1 58.726	s. ±0.046	s. ±0.007	37	m. s. +3 33.141	s. ±0.061	s. ±0.010	
	44	18.713	0.050	0.008	45	58.662	0.048	0.007	43	32.990	0.059	0.009	
	41	18.251	0.051	0.008	42	59.086	0.050	0.008	36	33.564	0.067	0.011	
	Prof. C. A. YOUNG, Observer.				S. W. ROBINSON, Observer.				O. B. WHEELER, Observer.				
	16	30	18.379	0.053	0.010	34	59.027	0.051	0.009	30	33.620	0.061	0.011
	17	21	18.383	0.054	0.012	24	59.015	0.060	0.012	26	33.409	0.061	0.012
	18	45	18.566	0.055	0.008	44	58.828	0.060	0.009	47	33.302	0.067	0.010
	22	25	—0 19.078	±0.071	±0.014	26	±58.269	±0.058	±0.011	24	+3 32.784	±0.049	0.010

TABLE No. 5.—*Difference of longitude between Escanaba and Menomonee.—General results.*

Date.	No. of observations.	By Escanaba record.	By Fort Howard record.	Mean of records.	Probable error of—	
					Single result.	Final result.
1865.		<i>m. s.</i>	<i>m. s.</i>	<i>m. s.</i>		
August 11.....	44	2 17.363	2 17.355	2 17.361	±0.063	±0.010
12.....	49	17.374	17.371	17.372	0.066	0.009
14.....	45	17.357	17.350	17.354	0.065	0.010
16.....	33	17.401	17.389	17.395	0.065	0.011
17.....	22	17.410	17.403	17.406	0.070	0.015
18.....	49	17.404	17.386	17.395	0.070	0.010
22.....	27	2 17.306	2 17.281	2 17.294	±0.075	±0.014

TABLE No. 6.—*Difference of longitude between Menomonee and Fort Howard.—General results.*

Date.	No. of obser- vations.	By Escanaba record.	By Fort Howard record.	Mean of records.	Probable error of—	
					Single result.	Final result.
1865.		m. s.	m. s.	m. s.		
August 11.....	39	1 34. 431	1 34. 412	1 34. 421	± 0. 057	± 0. 009
12.....	47	34. 355	34. 341	34. 348	0. 070	0. 010
14.....	39	34. 443	34. 432	34. 437	0. 075	0. 012
16.....	33	34. 579	34. 575	34. 577	0. 065	0. 011
17.....	27	34. 391	34. 387	34. 389	0. 078	0. 015
18.....	50	34. 469	34. 462	34. 465	0. 059	0. 002
22.....	25	1 34. 515	1 34. 517	1 34. 516	± 0. 069	± 0. 014

TABLE No. 7.—*Final result—Escanaba and Menomonee.*

Date.	Result of each night.	Difference from mean.	Probable er- ror.	Weight.	Weight by result.	No. of ob- servations.
1865.	m. s.	s.	s.			
August 11.....	2 17. 361	+0. 009	± 0. 010	1. 00	. 361	44
12.....	17. 372	—0. 002	0. 009	1. 24	. 460	49
14.....	17. 354	+0. 016	0. 010	1. 00	. 354	45
16.....	17. 395	—0. 025	0. 011	0. 83	. 329	33
17.....	17. 406	—0. 036	0. 015	0. 44	. 178	22
18.....	17. 395	—0. 025	0. 010	1. 00	. 395	49
22.....	2 17. 294	+0. 076	± 0. 014	0. 51	. 150	27
Sums .....				6. 02	2. 227	269
Final result = 2m. 17s. 370 ± 0s. 004.						

TABLE No. 8.—*Final result.—Menomonee and Fort Howard.*

Date.	Result of each night.	Difference from mean.	Probable er- ror.	Weight.	Weight by result.	No. of ob- servations.
1865.	m. s.	s.	s.			
August 11.....	1 34. 421	+0. 027	± 0. 009	1. 24	. 520	39
12.....	34. 348	+0. 100	0. 010	1. 00	. 348	47
14.....	34. 437	+0. 011	0. 012	0. 69	. 304	39
16.....	34. 577	—0. 129	0. 011	0. 83	. 476	33
17.....	34. 389	+0. 059	0. 015	0. 44	. 173	27
18.....	34. 465	—0. 017	0. 008	1. 56	. 726	50
22.....	1 34. 516	—0. 068	± 0. 014	0. 51	. 264	25
Sums .....				6. 27	2. 811	260
Final result = 1m. 34s. 448 ± 0s. 005.						

TABLE No. 9.—Latitude of lake survey astronomical station Escanaba.—General results.

Date.	No. of pairs observed.	Mean result for each night.	Probable error of a—	
			Single result.	Mean result.
1865.		° ' "	"	"
July 25.....	62	45 44 22.75	±0.670	±0.085
26.....	22	45 44 22.81	0.451	0.096
August 8.....	38	45 44 22.82	0.570	0.093
13.....	47	45 44 22.70	±0.642	±0.093
Sum.....	169	.....	±0.583	.....
			Probable error of final result = ± 0''.047. Final result = 45° 44' 22''.78 ± 0''.047.	

TABLE No. 10.—Latitude of lake survey astronomical station, Menomonee.—General results.

Date.	No. of pairs observed.	Mean result for each night.	Probable error of a—	
			Single result.	Mean result.
1865.		° ' "	"	
August 13.....	86	45 05 55.83	±0.613	±0.067
15.....	89	45 05 56.20	±0.610	±0.066
Sum.....	155	.....	±0.611	.....
			Probable error of final result = ± 0''.047. Final result = 45° 05' 56''.00 ± 0''.047.	

TABLE No. 11.—Latitude of lake survey astronomical station, Fishdam.—General results.

Date.	No. of pairs observed.	Mean result for each night.	Probable error of a—	
			Single result.	Mean result.
1865.		° ' "	"	"
September 10.....	13	45 53 23.32	±0.343	±0.095
11.....	34	45 53 23.22	0.418	0.072
14.....	33	45 53 23.33	±0.430	±0.075
Sum.....	80	.....	±0.397	.....
			Probable error of final result = ± 0''.045. Final result = 45° 53' 23''.29 ± 0''.045.	



TABLE No. 12.—Latitude of lake survey astronomical station, Boyer bluff.—General results.

Date.	No. of pairs observed.	Mean result for each night.	Probable error of a—	
			Single result.	Mean result.
1865.		° ' "	"	"
August 25.....	16	45 25 08.64	±1.754	±0.435
26.....	19	45 25 8.98	0.734	0.169
September 3.....	24	45 25 8.88	0.465	0.095
4.....	36	45 25 8.87	±0.802	±0.133
Sum.....	95	.....	±0.934	.....
Probable error of final result = ± 0''.088. Final result = 45° 25' 08''.84 ± 0''.088.				

TABLE No. 13.—Latitude of lake survey astronomical station, Door bluff.

Date.	No. of pairs observed.	Mean result for each night.	Probable error of a—	
			Single result.	Mean result.
1865.		° ' "	"	"
September 3.....	24	45 17 45.77	±0.897	±0.183
4.....	31	45 17 44.92	0.931	0.167
5.....	39	45 17 45.27	0.890	0.143
6.....	40	45 17 45.39	±0.857	±0.137
Sum.....	164	.....	±0.894	.....
Probable error of final result = ± 0''.077. Final result = 45° 17' 45''.32 ± 0''.077.				

TABLE No. 14.—Latitude of lake survey astronomical station, Cedar river.

Date.	No. of pairs observed.	Mean result for each night.	Probable error of a—	
			Single result.	Mean result.
1865.		° ' "	"	"
September 14.....	72	45 25 43.46	±0.922	±0.108
15.....	55	45 25 43.56	0.940	0.126
16.....	17	45 25 43.53	±0.811	±0.156
Sum.....	144	.....	±0.891	.....
Probable error of final result = ± 0''.076. Final result = 45° 25' 43''.50 ± 0''.076.				

TABLE No. 15.—Latitude and longitude of primary triangulation stations, determined 1865.

Name of primary triangulation station.	Difference in latitude from astronomical station.	North latitude.	Difference in longitude from astronomical station.	Longitude west from Greenwich.
	"	° ' "	s.	h. m. s.
Marquette light-house .....	+54.8	46 32 55. +	—18.01	5 49 28.83
Sand Point or Escanaba .....	+12.26	45 44 35.04	— 1.90	5 48 09.71
Menomonee .....	—36.69	45 05 19.31	— 7.30	5 50 21.6S
Fishdam .....	+ 0.68	45 53 23.97	+ 0.09	.....
Cedar river.....	+ 0.07	45 25 43.57	— 0.08	.....
Boyer bluff.....	+ 0.35	45 25 09.19	+ 0.08	.....
Door bluff.....	+ 0.73	45 17 46.05	— 0.05	.....

## APPENDIX B.

OFFICE UNITED STATES LAKE SURVEY,  
Detroit, October 6, 1866.

SIR: In compliance with your instructions, I have the honor herewith to present a report on the meteorology of the survey.

The tables annexed are the results of the monthly means of atmospheric pressure recorded in the readings of the barometer at each of the stations tri-daily, at the hours of 7 a. m., 2 p. m., and 9 p. m., reduced to the temperature of 32° Fahrenheit.

A column each for the highest and lowest range of the barometer is given. The mean temperature of each month, and a column each for the maximum and minimum, showing the range of temperature, are given. The mean monthly elastic force of vapor and relative humidity, with the monthly amount of rain and melted snow, are also given for each place.

The first column of each heading exhibits the mean of the year 1865, and in the second column are recorded the averages of the same for five years at all the stations, excepting Thunder bay and Tawas City, at which there are averages for six years, and at Grand Haven for three years.

The diagram is intended to exhibit at one view the relations of the variations of the barometer with the several months of the year.

Their parallelism presents the fact that the influences of the seasons are nearly uniform over all the stations.

## EFFECT OF THE SEASONS ON THE BAROMETER.

The continued series of meteorological observations for upwards of six years at the principal stations of the lake survey shows pretty clearly the relations of the barometer with the different seasons.

The means of the readings of the barometer for the winter and autumnal months produce an average considerably above the mean of the year, while those of the spring and summer are correspondingly below. The monthly means of the months of May, June, and July are very nearly the same, and are a little below the annual mean. During the months of August and September there is an elevation of the barometric column almost equal to that of the winter months; but it falls again in October and November nearly to the usual summer depression.

From November it rises rapidly to the winter elevation, which it retains during the months of December and January. It then falls from February to March to the usual low standards of the summer months. In the month of April, however, a rise of the barometer is manifested uniformly at all our stations; but it suddenly falls again in the month of May to a point below that of any month in summer. Although the mean summer heat of August is equal to that of July, yet the barometer at all the stations rises from July to August to the extent of from .025 to .040 of an inch, and continues to rise in this proportion until September, when it again falls. The "little winter" of the arctic circle, affecting sensibly the adjacent temperate zone, occurring generally during the months of April or May, is rendered quite conspicuous by the annual curve of the barometer at all our stations. It is marked by the elevation of the barometric column in April. The late Admiral Fitzroy (Weather Book, p. 76, and also p. 166) accounts for its occurrence at that time by the fact that as the pole

is turned more toward the sun after the vernal equinox, heat increases in the direction of the pole, producing a thaw of the exterior ice, after which an interval of comparatively cold weather follows, caused by the absorption of heat near the polar circle, affecting more or less the contiguous regions; and then, perhaps, the frequent cold of April or May in this country, (and other parts of our hemisphere also,) after a warmer early spring than usual, may be accounted for generally.

This general fact, which operates on an immense scale in those regions, is again illustrated on a small one by observations on our wet and dry bulb thermometers, when the weather is at or a little below the freezing point, making it so difficult to take correct observations on those instruments at that time. The latent heat necessary to hold the water in a liquid state being given out and made free on its assuming the solid form, and *vice versa*, the free heat being taken up when ice is melted, renders the mercury so unstable, suddenly rising when freezing takes place, and as suddenly falling when it thaws, that those observers unacquainted with its philosophy are sorely puzzled by the apparent freaks of the thermometer.

Then again the operation of the same principle produces the converse effect in autumn, making what is familiarly known in this country our "Indian summer," and in the old countries "St. John's" and "St. Martin's summers."

This state of the weather is evidently caused by the liberation of heat during the condensation of vapor and the formation of ice, which is produced on so grand a scale in the arctic regions soon after the autumnal equinox, when the pole is turned from the sun, that its effects are felt far down in the temperate zone, and appears to be of almost universal application, especially on the northern borders of the temperate zone.

The effect of the second or "Indian summer" in depressing the barometric column is more decided than the opposite or second winter in April in elevating it. Both are well shown in the diagram of barometric curves at all our stations.

The greatest fluctuations of the barometer usually begin about the months of September or October, and continue until about the months of April or May, thus showing that this condition of atmospheric pressure is influenced by the storms, especially of wind storms, which are most prevalent in those months in which such fluctuations occur.

*Modifying influence of the lake waters upon the summer and winter temperatures.*

Locality.	Latitude.	Mean annual temperature.	Mean summer temperature.	Mean winter temperature.	Extreme maximum.	Extreme minimum.	Extreme range.
	°	°	°	°	°	°	°
Superior City .....	46 40	38.54	60.78	14.66	97.0	— 28.0	125.0
Ontonagon .....	46 52	39.92	62.46	17.88	98.0	— 37.0	135.0
Marquette .....	46 32	41.55	63.09	20.08	103.0	— 33.0	136.0
Thunder Bay island .....	45 02	42.42	62.35	23.95	93.0	— 20.5	113.5
Tawas City .....	44 15	44.33	65.15	24.61	89.5	— 25.0	114.5
Milwaukee .....	43 03	45.99	67.42	24.65	97.0	— 30.0	127.0
Grand Haven .....	43 05	47.36	68.63	26.62	91.0	— 16.0	107.0
Detroit .....	42 20	48.23	69.19	28.17	98.0	— 19.0	117.0
Monroe City .....	41 43	49.23	71.08	28.63	100.5	— 16.0	116.5
Cleveland .....	41 30	49.71	69.90	30.16	94.0	— 14.0	108.0
Buffalo .....	42 53	47.26	67.56	27.76	96.0	— 22.0	118.0
Fort Niagara .....	43 15	46.61	67.21	27.86	90.0	— 15.0	105.0
Charlotte .....	43 12	47.88	68.46	28.56	96.0	— 20.0	116.0
Sackett's Harbor .....	43 55	46.42	67.82	24.81	93.0	— 46.0	139.0

The modifying influence of the lake waters upon the temperature, and more especially upon the winter temperatures, will be seen by a glance at the foregoing table, showing the extreme temperatures of the summer and winter seasons. It will thus be seen that all our stations situated to the windward of the waters of the lakes, or where the northerly and northwesterly winds, before reaching them, do not pass over the surface of the lakes, have invariably a comparatively low winter temperature, while their summer temperature is high, accompanied also by a high range in the extremes of temperature.

Thus at Superior City, Milwaukee, and Sackett's Harbor, the winter temperature is from 15 to 25 degrees, and the range upwards of 130 degrees; while at Marquette, Thunder Bay island, Detroit, and Charlotte, with nearly corresponding latitudes, the winter temperature is 5 or 6 degrees higher, and the range (excepting Marquette) 15 or 20 degrees lower.

A comparison of the winter temperature, as recorded at Superior City and Ontonagon, well illustrates this fact. Ontonagon is actually 12' farther north than Superior City, yet the average mean temperature of the winter is more than 3 degrees higher than that of Superior City, which can only be accounted for by the influence produced by the northerly and northwesterly winds coming immediately over the waters of Lake Superior.

Superior City is situated at the extreme western shores of the lake, and receives its northerly and northwesterly winds from the great prairies of the west. Ontonagon is situated to the leeward, on the southern shores of the lake, nearly midway between its western extremity and Keweenaw Point, where all its northerly and westerly winds pass for a considerable distance over the surface of the waters of the lake before their reception.

Another example is furnished by the records of Milwaukee and Grand Haven. They are exactly on the same line of latitude, with nothing but the waters of Lake Michigan intervening between them. The winter temperature of Grand Haven is two degrees above the same of Milwaukee. Milwaukee receives the northerly and westerly winds immediately off the western plains of Wisconsin and Minnesota, while Grand Haven receives the same winds, but very sensibly modified and elevated in temperature by the short passage, over the comparatively narrow bed of Lake Michigan. These facts may not at first sight seem to possess much interest or importance; but, taken in connection with those of a similar character, on a grander scale, as seen by differences of temperature and climate on the eastern and western shores of the great Atlantic and Pacific oceans, are highly interesting; and all such facts, however small in themselves they may be, tending to elucidate the truth and eliminate error, are of much practical importance. At Vancouver island, on the eastern shores of the Pacific, and at the British Isles and the north of France, on the eastern shores of the Atlantic, under the 50th parallel of latitude, the climate, and especially the winter climate, is mild and temperate.

On the other hand, under the same parallel, at Newfoundland, on the eastern coast of America, and on the eastern coast of Siberia, near the Gulf of Tartary and Amour, the winter climate is rigorous in the extreme. The elevation of the temperature, and consequent amelioration of climate, at the two first-named stations, has been attributed by many men of science to the warm waters of the Gulf Stream flowing towards the western coasts of Europe, and the circulation of a similar current of warm oceanic waters from the tropical regions of the Pacific to the western coasts of America.

To show that this plausible theory cannot be exactly correct, it will be only necessary to advert to the records of the lake stations, where the same general facts are proved to exist without the presence of the circulation of water of a higher temperature as seen in the oceanic currents.

That these currents do have *some* effect may be admitted; but that they are the sole, or even principal, cause, may be doubted, upon the consideration of two well-founded facts: First, the countervailing effect of evaporation, thereby reducing the temperature, is of universal and well-known application; and, secondly, the same phenomenon is known to exist where there cannot possibly be any Gulf Stream, or circulation of water of a higher temperature.

The position of the localities cited, where the most opposite effects are produced, are equally in the vicinity of large bodies of water. This alone by some has been considered as sufficient to produce the effect of elevation of temperature; but the opposite effect at other stations, equally in the vicinity of large bodies of water, is sufficient to disprove this theory. The true explanation of these differences, in our opinion, can only be found by the fact of their being situated to the windward or leeward of location, where northerly and northwesterly winds have immediately before passed over large bodies of land or water.

Those winds coming from the landward side, being already cold and dry, still add to the reduction of the temperature by the increased evaporation which takes place; while those from the seaward, being moist and comparatively warm, further intensify the direct effect by the condensation and precipitation sure immediately to follow, fulfilling a well-known and established law.

#### SEASONS OF THE GREATEST AMOUNT OF RAIN AT THE LAKE STATIONS.

*Superior City.*—August and September are the two months of the greatest amount of rain. December is the least. The amount for June is small, yet more than any winter month except February.

*Ontonagon.*—August and September are the two highest consecutive months of rain-fall, although January is slightly in excess over September. March has the least, though June is small.

*Marquette.*—August and September are the two most rainy months, March and April being the least. The remaining eight months are nearly equal, being near a mean of the whole.

*Thunder Bay island.*—September and October are the two highest consecutive months' fall, although January, July, and April each exceed that of October. May and June have the least.

*Tawas City.*—October and November are the two highest consecutive months of rain-fall; November but slightly in excess over August. February has the least rain; then June.

There is a remarkable disparity alluded to in previous reports in the amount of rain-fall between this place and Thunder Bay station, situated as they both are on the western shore of Lake Huron, with no high grounds in the rear to affect them, except what pertains equally to both stations. The average of six years' rain-fall at Thunder Bay is 33.50 inches per annum. The average for the same time at Tawas City is only 21.92 inches per annum.

*Milwaukee.*—April and May are the two consecutive months of greatest rain, although but slightly in excess over July and August. After May and July, September is the next highest. February has the least, and June next.

*Grand Haven.*—August and September are the two highest consecutive months, although November is slightly in excess over September. April is the least rainy month.

*Detroit.*—August and September are the two highest consecutive months, although July is slightly in excess over August. The least rainy months are February and January.

*Monroe City.*—July and August are the two highest months of rain-fall, although September is but slightly in deficit below each. The rainy season begins with July, and ends with September. February, January, and December have the least rain.

*Cleveland.*—The greatest amount of rain in one month is November. The rainy season begins with July, and ends with November. The least rainy months are June and February.

*Buffalo.*—August is the most rainy month, but the rainy season begins with July, and ends with November. The least rainy months are June and February.

*Fort Niagara.*—The greatest amount of rain in one month is in July, although the two highest consecutive months are October and November. June has the least; then follow April and February.

*Charlotte.*—July and August are the two highest consecutive months; then follow September and October, which constitute the rainy season here. January, February, and June are the least rainy months.

*Sackett's Harbor.*—The rainy season here begins with July and ends with November; the most rainy months being October and November. June has the least rain.

On the whole, the rainy season at all the lake stations are pretty uniform, beginning with July and ending with November. The least amount of precipitation is in the winter months. June is also pretty uniformly a dry month.

Respectfully submitted :

J. M. BIGELOW, *Assistant.*

Colonel WM. F. RAYNOLDS,  
*Superintendent U. S. Lake Survey.*

## SUPERIOR, WISCONSIN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.													
1865.....	29.350	29.386	29.280	29.269	29.261	29.239	29.352	29.345	29.273	29.388	29.279	29.281	29.303
Av. of 5 y'rs, '60 to '64, inclusive.	29.314	29.292	29.276	29.298	29.255	29.295	29.270	29.299	29.314	29.294	29.375	29.357	29.297
Maximum rise of barometer..													
1865.....	29.689	29.869	29.709	29.878	29.523	29.537	29.703	29.599	29.711	29.745	29.880	29.888	29.888
Highest in 5 y'rs, '60 to '64, incl.	29.944	39.916	29.940	29.793	29.762	29.753	29.765	29.622	29.839	30.026	30.004	30.019	30.026
Minimum fall of barometer..													
1865.....	28.952	28.787	28.695	28.245	29.741	28.841	28.928	28.973	28.878	28.857	28.572	28.393	28.245
Lowest in 5 y'rs, '60 to '64, incl.	28.547	28.513	28.567	28.400	28.259	28.710	28.692	28.810	28.680	28.388	28.463	28.541	28.259
Mean monthly temperature..													
1865.....	11° 20'	19° 50'	21° 60'	35° 00'	47° 80'	54° 40'	61° 80'	64° 00'	61° 80'	44° 70'	38° 30'	11° 10'	39° 27'
Av. of 5 y'rs, '60 to '64, inclusive.	13° 52'	14° 55'	25° 15'	36° 59'	47° 66'	56° 31'	63° 22'	63° 43'	53° 80'	42° 47'	25° 60'	16° 02'	38° 54'
Highest monthly maximum temperature .....	42°	42°	61°	70°	92°	90°	88°	92°	88°	65°	66°	38°	92°
Highest in 5 y'rs, '60 to '64, incl.	53°	55°	69°	68°	92°	96°	94°	97°	86°	81°	60°	49°	97°
Lowest monthly minimum temperature .....	-26°	-12°	-21°	-5°	23°	37°	40°	42°	40°	18°	16°	-29°	-28°
Lowest in 5 y'rs, '60 to '64, incl.	-39°	-38°	-17°	3°	18°	29°	35°	33°	25°	16°	-15°	-28°	-39°
Mean monthly elastic force of vapor.....	.067	.094	.105	.167	.259	.352	.447	.495	.468	.257	.188	.066	.247
Av. of 5 y'rs, '60 to '64, inclusive.	.086	.085	.111	.173	.251	.349	.449	.461	.342	.221	.135	.089	.229
Mean monthly relative humidity .....	.767	.795	.754	.805	.767	.831	.817	.831	.854	.845	.791	.708	.797
Av. of 5 y'rs, '60 to '64, inclusive.	.805	.816	.770	.796	.756	.705	.775	.786	.807	.744	.807	.787	.788
Mean monthly amount of rain and melted snow .....	0.34	2.30	1.24	3.31	2.31	4.57	4.06	3.07	6.22	0.82	0.59	1.23	30.08
Av. of 5 y'rs, '60 to '64, inclusive.	1.02	1.72	1.52	1.62	2.92	1.77	2.51	3.92	3.38	2.78	1.03	0.78	24.97



## ONTONAGON, MICHIGAN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.													
1865.....	29.252	29.375	29.238	29.261	29.249	29.218							
Average of 5 y'rs, '60 to '64 incl.	29.291	29.295	29.296	29.331	29.270	29.315	29.288	29.312	29.331	29.287	29.259	29.311	29.298
Maximum rise of barometer..													
1865.....	29.710	29.794	29.677	29.807	29.506	29.534							
Highest in 5 y'rs, '60 to '64 incl.	29.893	29.946	29.929	29.859	29.897	29.789	29.747	29.635	29.840	29.963	30.043	30.017	30.043
Minimum fall of barometer..													
1865.....	28.359	28.817	28.639	28.311	28.688	28.825							
Lowest in 5 y'rs, '60 to '64 incl.	28.579	28.444	28.502	28.492	28.214	28.412	28.648	28.777	28.667	28.314	28.385	28.452	28.214
Mean monthly temperature..													
1865.....	15°.30	20°.50	21°.90	35°.80	48°.80	57°.90							
Average of 5 y'rs, '60 to '64 incl.	16°.59	15°.65	24°.04	37°.67	49°.30	59°.63	64°.00	63°.75	54°.32	43°.37	31°.00	21°.41	40°.06
Highest monthly maximum temperature.....													
1865.....	34°	48°	59°	75°	86°	92°.5							
Highest in 5 y'rs, '60 to '64 incl.	45°	45°	61°	72°	94°	97°	97°	98°	89°	87°	55°	49°	98°
Lowest monthly minimum temperature .....													
1865.....	-31°	-21°	-22°	7°	22°	38°							
Lowest in 5 y'rs, '60 to '64 incl.	-34°	-37°	-19°	-5°	19°	30°	34°	33°	20°	16°	-3°	-16°	-37°
Mean monthly elastic force of vapor.....													
1865.....	.083	.093	.107	.149	.263	.399							
Average of 5 y'rs, '60 to '64 incl.	.084	.077	.098	.178	.268	.405	.491	.496	.365	.223	.141	.102	.244
Mean monthly relative humidity .....													
1865.....	.861	.783	.749	.702	.733	.809							
Average of 5 y'rs, '60 to '64 incl.	.756	.753	.732	.757	.770	.769	.799	.819	.816	.787	.774	.774	.773
Mean monthly amount of rain and melted snow .....													
1865.....	1.62	0.55	.208	2.63	2.66	3.15							
Average of 5 y'rs, '60 to '64 incl.	2.65	1.64	1.27	1.68	2.06	1.80	2.24	2.84	.258	2.35	1.64	2.37	25.12

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.	29.210	29.330	29.171	29.200	29.195	29.194	29.315	29.339	29.291	29.342	29.250	29.194	29.252
Av. of 5 y'rs, '60 to '64, inclusive.	29.242	29.247	29.253	29.302	29.244	29.272	29.252	29.280	29.301	29.260	29.222	29.284	29.244
Maximum rise of barometer.	29.612	29.780	29.601	29.674	29.530	29.487	29.595	29.592	29.642	29.475	29.932	29.660	29.932
Highest in 5 y'rs, '60 to '64, incl.	29.912	29.921	29.957	29.848	29.750	29.737	29.647	29.663	29.861	29.852	30.167	29.975	30.157
Minimum fall of barometer.	28.797	28.944	28.563	29.382	28.673	28.748	28.862	28.964	28.910	28.621	28.433	28.391	28.382
Lowest in 5 y'rs, '60 to '64, incl.	28.548	28.444	28.495	28.507	28.284	28.619	28.700	28.804	28.703	28.500	28.355	28.312	28.294
Mean monthly temperature.	17°	20°	24°	70°	26°	20°	38°	50°	51°	60°	61°	40°	62°
Av. of 5 y'rs, '60 to '64, inclusive.	18°	92	17°	86	26°	10°	38°	09	50°	72	60°	11°	64°
Highest monthly maximum temperature.	45°	48°	63°	72°	84°	95°	95°	94°	92°	84°	69°	40°	95°
Highest in 5 y'rs, '60 to '64, incl.	57°	52°	62°	72°	92°	101°	103°	100°	92°	76°	66°	51°	103°
Lowest monthly minimum temperature.	-7°	0°	-17°	8°	24°	38°	38°	43°	40°	25°	20°	-5°	-17°
Lowest in 5 y'rs, '60 to '64, incl.	-31°	-33°	-19°	3°	16°	31°	33°	38°	23°	15°	-2°	-16°	-33°
Mean monthly elastic force of vapor.	.028	.036	.052	.078	.127	.242	.216	.308	.487	.233	.195	.102	.175
Av. of 5 y'rs, '60 to '64, inclusive.	.084	.076	.102	.146	.225	.305	.397	.406	.311	.247	.134	.084	.209
Mean monthly relative humidity.	.188	.209	.235	.319	.321	.422	.387	.438	.744	.785	.791	.857	.475
Av. of 5 y'rs, '60 to '64, inclusive.	.688	.686	.678	.634	.605	.608	.675	.685	.711	.709	.710	.679	.673
Mean monthly amount of rain and melted snow.	1.00	2.07	3.99	3.93	2.25	3.98	3.26	1.11	1.01	1.84	0.59	1.05	26.08
Av. of 5 y'rs, '60 to '64, inclusive.	2.27	2.39	1.60	1.98	2.05	2.83	2.44	3.33	3.15	2.84	2.82	2.37	30.07

## THUNDER BAY, MICHIGAN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.	29.350	29.455	29.295	29.360	29.349	29.362	29.405	29.457	29.442	29.398	29.417		
Av. of 6 y'rs. '59 to '64, inclusive.	29.352	29.325	29.276	29.347	29.318	29.344	29.342	29.357	29.398	29.356	29.311	29.352	29.334
Maximum rise of barometer.	29.838	29.881	29.777	29.880	29.727	29.608	29.701	29.652	29.700	29.815	30.670		
Highest in 6 y'rs. '59 to '64, incl.	29.979	29.992	29.887	29.934	29.842	29.820	29.806	29.690	29.903	29.950	30.129	30.067	30.129
Minimum fall of barometer.	29.039	28.992	28.423	28.485	28.817	28.956	28.980	29.078	29.171	28.658	28.057		
Lowest in 6 y'rs. '59 to '64, incl.	28.563	28.551	28.050	28.481	28.550	28.677	28.782	28.809	28.743	28.668	28.421	28.519	28.050
Mean monthly temperature.	19.20	23.60	29.70	35.40	47.00	58.40	62.90	64.90	64.0	60.46	60.41	20	
Av. of 6 y'rs. '59 to '64, inclusive.	23.24	22.57	28.31	36.30	47.16	57.05	64.32	65.67	56.69	46.26	36.23	26.04	42.42
Lowest monthly maximum temperature.	40.5	40	51	59	72	77	80	82	81	72.5	69.5	51	93
Highest in 6 y'rs. '59 to '64, incl.	47	47	49	62	69	90	90	93	78	71.5	23		
Lowest monthly minimum temperature.	-7.5	-6.5	-11.5	10	27	39	41	46	41	26	23		
Lowest in 6 y'rs. '59 to '64, incl.	-17.5	-20.5	-11	7.5	25	34	44	40	33	25	8	-5	-20.5
Mean monthly elastic force of vapor.	.075	.090	.125	.163	.222	.378	.405	.440	.495	.248	.181		
Av. of 6 y'rs. '59 to '64, inclusive.	.099	.099	.116	.162	.237	.350	.400	.490	.372	.263	.171	.115	.245
Mean monthly relative humidity.	.650	.666	.698	.693	.681	.763	.761	.712	.787	.753	.708		
Av. of 6 y'rs. '59 to '64, inclusive.	.771	.739	.703	.737	.739	.737	.712	.719	.782	.787	.766	.755	.737
Mean monthly amount of rain and melted snow.	1.43	1.94	3.41	3.46	2.01	3.63	1.72	3.02	4.98	2.17	0.39		
Av. of 6 y'rs. '59 to '64, inclusive.	3.49	2.77	2.73	3.00	2.08	2.11	3.05	2.12	3.64	2.90	2.79	2.84	33.52

TAWAS CITY, MICHIGAN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.													
1865.....	29.357	29.458	29.295	29.372	29.331	29.343	29.384	29.444	29.421	29.401	29.408	29.395	29.384
Average of 6 y'rs, '59 to '64, incl.	29.380	29.385	29.283	29.355	29.323	29.360	29.352	29.372	29.419	29.376	29.314	29.397	29.356
Maximum rise of barometer..													
1865.....	29.875	29.894	29.802	29.896	29.746	29.599	29.704	29.687	29.702	29.773	30.041	29.846	30.041
Highest in 6 y'rs, '59 to '64, incl.	29.989	30.017	29.899	29.981	29.819	29.900	29.815	29.733	29.892	29.986	30.132	30.109	30.132
Minimum fall of barometer..													
1865.....	28.950	28.796	28.558	28.567	28.852	28.962	28.996	29.065	29.114	28.648	28.686	28.860	28.558
Lowest in 6 y'rs, '59 to '64, incl.	28.635	28.573	28.059	28.556	28.545	28.627	28.807	28.860	28.792	28.708	28.542	28.579	28.059
Mean monthly temperature..													
1865.....	18° 50'	23° 30'	30° 30'	41° 50'	52° 40'	66° 50'	61° 70'	60° 80'	66° 00'	45° 80'	38° 80'	25° 70'	44° 73'
Average of 6 y'rs, '59 to '64, incl.	23° 64'	23° 86'	30° 13'	39° 51'	52° 03'	60° 86'	67° 29'	67° 30'	58° 09'	46° 71'	36° 37'	26° 34'	44° 33'
Highest monthly maximum temperature.....	39°	57°	54° 5'	61°	73°	85°	83°	81°	83° 5'	72°	59°	47°	85°
Highest in 6 y'rs, '59 to '64, incl.	50°	51° 5'	56°	60°	81°	89° 5'	86°	89°	85°	75°	59°	60°	89° 5'
Lowest monthly minimum temperature .....													
1865.....	-4°	-9°	-10°	18°	25°	39°	40° 5'	42°	39°	27°	25°	-2°	-10°
Lowest in 6 y'rs, '59 to '64, incl.	-16°	-25°	-10°	9°	28°	32° 5'	42°	40°	28°	20°	11°	-6°	-25°
Mean monthly elastic force of vapor.....													
1865.....	.079	.102	.152	.207	.312	.516	.481	.512	.533	.265	.192	.116	.298
Average of 6 y'rs, '59 to '64, incl.	.131	.116	.138	.196	.304	.413	.525	.529	.385	.265	.181	.125	.275
Mean monthly relative humidity.....													
1865.....	.690	.740	.791	.757	.758	.773	.776	.784	.833	.808	.753	.741	.767
Average of 6 y'rs, '59 to '64, incl.	.851	.814	.793	.784	.761	.748	.769	.776	.762	.787	.813	.804	.788
Mean monthly amount of rain and melted snow .....													
1865.....	0.50	1.20	3.64	3.99	0.73	3.69	1.71	1.61	6.65	2.04	0.82	0.77	27.35
Average of 6 y'rs, '59 to '64, incl.	1.60	0.97	1.96	2.29	1.74	1.14	1.94	2.25	1.81	2.42	2.28	1.49	21.92

ONTONAGON, MICHIGAN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1865.....	29.252	29.375	29.238	29.261	29.249	29.218							
Average of 5 y'rs, '60 to '64 incl.	29.291	29.295	29.296	29.331	29.270	29.315	29.288	29.312	29.331	29.287	29.259	29.311	29.298
1865.....	29.710	29.794	29.677	29.807	29.506	29.534							
Highest in 5 y'rs, '60 to '64 incl.	29.893	29.946	29.929	29.859	29.897	29.789	29.747	29.635	29.840	29.963	30.043	30.017	30.043
1865.....	28.359	28.817	28.639	28.311	28.688	28.825							
Lowest in 5 y'rs, '60 to '64 incl.	28.579	28.444	28.502	28.492	28.214	28.412	28.648	28.777	28.667	28.314	28.385	28.452	28.214
1865.....	15.30	20.50	21.90	35.80	48.80	57.90							
Average of 5 y'rs, '60 to '64 incl.	16.59	15.65	24.04	37.67	49.30	59.63	64.00	63.75	54.32	43.37	31.00	21.41	40.06
1865.....	34°	48°	59°	75°	86°	92°	97°	98°	89°	87°	55°	49°	98°
Highest in 5 y'rs, '60 to '64 incl.	45°	45°	61°	72°	94°	97°							
1865.....	—31°	—21°	—22°	7°	22°	38°							
Lowest in 5 y'rs, '60 to '64 incl.	—34°	—37°	—19°	—5°	19°	30°	34°	33°	20°	16°	—3°	—16°	—37°
1865.....	.083	.093	.107	.149	.263	.399							
Average of 5 y'rs, '60 to '64 incl.	.084	.077	.098	.178	.268	.405	.491	.496	.365	.223	.141	.102	.244
1865.....	.861	.783	.749	.702	.733	.809							
Average of 5 y'rs, '60 to '64 incl.	.756	.753	.732	.757	.770	.769	.799	.819	.816	.787	.774	.774	.773
1865.....	1.62	0.55	.208	2.63	2.66	3.15							
Average of 5 y'rs, '60 to '64 incl.	2.65	1.64	1.27	1.68	2.06	1.80	2.24	2.84	.258	2.35	1.64	2.37	25.12

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
1865.....	29.210	29.330	29.171	29.200	29.195	29.194	29.315	29.339	29.291	29.342	29.250	29.194	29.252
Av. of 5 y'rs, '60 to '64, inclusive.	29.242	29.247	29.255	29.302	29.244	29.272	29.252	29.280	29.301	29.260	29.222	29.284	29.244
1865.....	29.612	29.780	29.601	29.674	29.530	29.487	29.595	29.592	29.642	29.475	29.932	29.660	29.932
Highest in 5 y'rs, '60 to '64, incl.	29.912	29.921	29.957	29.848	29.750	29.737	29.647	29.663	29.861	29.852	30.167	29.975	30.157
1865.....	28.797	28.944	28.563	29.382	28.673	28.748	28.862	28.964	28.910	28.621	28.433	28.391	28.382
Lowest in 5 y'rs, '60 to '64, incl.	28.548	28.444	28.495	28.507	28.284	28.619	28.700	28.804	28.703	28.500	28.355	28.312	28.294
1865.....	17.20	24.70	26.20	38.50	51.60	61.40	62.10	66.90	66.70	43.70	39.90	20.10	43.25
Av. of 5 y'rs, '60 to '64, inclusive.	18.92	17.86	26.10	38.09	50.72	60.11	64.53	64.65	55.30	44.40	31.82	23.48	41.55
1865.....	45°	48°	63°	72°	84°	95°	91°	94°	92°	84°	69°	40°	95°
Highest in 5 y'rs, '60 to '64, incl.	57°	52°	62°	72°	92°	101°	103°	100°	92°	76°	66°	51°	103°
1865.....	-7°	0°	-17°	8°	24°	38°	38°	43°	40°	25°	20°	-5°	-17°
Lowest in 5 y'rs, '60 to '64, incl.	-31°	-33°	-19°	3°	16°	31°	33°	38°	23°	15°	-2°	-16°	-33°
1865.....	.028	.036	.052	.078	.127	.242	.216	.308	.487	.233	.195	.102	.175
Av. of 5 y'rs, '60 to '64, inclusive.	.084	.076	.102	.146	.225	.305	.397	.406	.311	.247	.134	.084	.209
1865.....	.188	.209	.235	.319	.321	.422	.387	.438	.744	.785	.791	.857	.475
Av. of 5 y'rs, '60 to '64, inclusive.	.688	.626	.678	.634	.605	.608	.675	.685	.711	.709	.710	.679	.673
1865.....	1.00	2.07	3.99	3.93	2.25	3.98	3.26	1.11	1.01	1.84	0.59	1.05	26.08
Av. of 5 y'rs, '60 to '64, inclusive.	2.27	2.39	1.60	1.98	2.05	2.83	2.44	3.33	3.15	2.84	2.82	2.37	30.07



THUNDER BAY, MICHIGAN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.	29.350 29.352 Av. of 6 y'rs, '59 to '64, inclusive.	29.455 29.325 29.394	29.295 29.276 29.285	29.366 29.347 29.356	29.349 29.318 29.333	29.362 29.344 29.353	29.405 29.342 29.373	29.457 29.358 29.407	29.442 29.398 29.420	29.398 29.356 29.377	29.417 29.311 29.364	29.382 29.334	29.334
Maximum rise of barometer.	29.838 29.979 Highest in 6 y'rs, '59 to '64, incl.	29.881 29.992 29.934	29.777 29.887 29.832	29.880 29.934 29.904	29.727 29.842 29.784	29.608 29.820 29.714	29.701 29.806 29.690	29.652 29.690 29.671	29.700 29.903 29.800	29.815 29.950 29.815	30.670 30.129 30.067	30.129	30.129
Minimum fall of barometer.	29.039 28.563 Lowest in 6 y'rs, '59 to '64, incl.	28.992 28.551 28.551	28.423 28.050 28.050	28.485 28.481 28.481	28.817 28.550 28.550	28.956 28.677 28.677	28.930 28.782 28.782	29.078 28.809 28.809	29.171 28.743 28.743	28.658 28.668 28.668	28.057 28.421 28.421	28.050	28.050
Mean monthly temperature.	19° 20' 23° 24' Av. of 6 y'rs, '59 to '64, inclusive.	23° 60' 22° 57' 22° 57'	29° 70' 28° 31' 28° 31'	35° 40' 36° 33' 36° 33'	47° 00' 46° 47' 46° 47'	58° 40' 57° 05' 57° 05'	62° 90' 64° 32' 64° 32'	64° 90' 65° 67' 65° 67'	80° 64° 56° 69° 56° 69°	46° 26° 46° 26° 46° 26°	41° 20° 36° 23° 36° 23°	26° 04° 26° 04° 26° 04°	42° 42°
Lowest monthly maximum temperature.	40° 5' 47° Highest in 6 y'rs, '59 to '64, incl.	40° 47° 47°	51° 49° 49°	59° 62° 62°	72° 69° 69°	77° 90° 90°	80° 90° 90°	82° 93° 93°	81° 78° 78°	72° 5' 71° 5' 71° 5'	69° 5' 23° 23°	51° .....	93° .....
Lowest monthly minimum temperature.	-7° 5' -17° 5' Lowest in 6 y'rs, '59 to '64, incl.	-6° 5' -20° 5' -20° 5'	-11° 5' -11° -11°	10° 7° 5' 7° 5'	27° 25° 25°	39° 34° 34°	41° 44° 44°	46° 40° 40°	41° 33° 33°	26° 25° 25°	23° 8° 8°	-5° -20° 5'	-20° 5'
Mean monthly elastic force of vapor.	.075 .099 Av. of 6 y'rs, '59 to '64, inclusive.	.090 .099 .099	.125 .116 .116	.163 .162 .162	.222 .237 .237	.378 .350 .350	.405 .460 .460	.440 .490 .490	.495 .372 .372	.248 .263 .263	.181 .171 .171	.115 .245	.245
Mean monthly relative humidity.	.650 .771 Av. of 6 y'rs, '59 to '64, inclusive.	.666 .739 .739	.698 .703 .703	.693 .737 .737	.681 .739 .739	.763 .737 .737	.761 .702 .702	.712 .719 .719	.787 .782 .782	.753 .787 .787	.708 .766 .766	.755 .737	.737
Mean monthly amount of rain and melted snow.	1.43 3.49 Av. of 6 y'rs, '59 to '64, inclusive.	1.94 2.77 2.77	3.41 2.73 2.73	3.46 3.00 3.00	2.01 2.08 2.08	3.63 2.11 2.11	1.72 3.05 3.05	3.02 2.12 2.12	4.98 3.64 3.64	2.17 2.90 2.90	0.39 2.79 2.79	2.84 33.52	33.52

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.													
1865.....	29.357	29.458	29.295	29.372	29.331	29.343	29.384	29.444	29.421	29.401	29.408	29.395	29.384
Average of 6 y'rs, '59 to '64, incl.	29.380	29.385	29.283	29.355	29.323	29.360	29.352	29.372	29.419	29.376	29.314	29.397	29.356
Maximum rise of barometer..													
1865.....	29.875	29.894	29.802	29.896	29.746	29.599	29.704	29.687	29.702	29.773	30.041	29.846	30.041
Highest in 6 y'rs, '59 to '64, incl.	29.989	30.017	29.899	29.951	29.819	29.900	29.815	29.733	29.892	29.986	30.132	30.109	30.132
Minimum fall of barometer..													
1865.....	28.950	28.796	28.558	28.567	28.852	28.962	28.996	29.065	29.114	28.648	28.686	28.866	28.558
Lowest in 6 y'rs, '59 to '64, incl.	28.635	28.573	28.059	28.556	28.545	28.627	28.807	28.860	28.792	28.708	28.542	28.579	28.059
Mean monthly temperature..													
1865.....	18° 50' 25"	30° 30' 80"	41° 50' 52"	40° 66' 50"	61° 50' 61"	70° 60' 80"	60° 45' 80"	66° 00' 45' 80"	66° 00' 45' 80"	38° 80' 25° 70'	44° 73'		
Average of 6 y'rs, '59 to '64, incl.	23° 64' 23"	86° 30' 13"	39° 51' 52"	03° 60' 86° 67° 29'	67° 30' 55° 09'	46° 71' 36° 37'	26° 34' 44° 33'						
Highest monthly maximum temperature.....	39°	57°	54° 5'	61°	73°	85°	83°	81°	83° 5'	72°	59°	47°	85°
Highest in 6 y'rs, '59 to '64, incl.	50°	51° 5'	56°	60°	81°	89° 5'	86°	89°	85°	75°	59°	60°	89° 5'
Lowest monthly minimum temperature .....	-4°	-9°	-10°	18°	25°	39°	40° 5'	42°	39°	27°	25°	-2°	-10°
Lowest in 6 y'rs, '59 to '64, incl.	-16°	-25°	-10°	9°	28°	32° 5'	42°	40°	28°	20°	11°	-6°	-25°
Mean monthly elastic force of vapor.....	.079	.102	.152	.207	.312	.516	.481	.512	.533	.265	.192	.116	.298
Average of 6 y'rs, '59 to '64, incl.	.131	.116	.138	.196	.304	.413	.525	.529	.385	.265	.181	.125	.275
Mean monthly relative humidity.....													
1865.....	.690	.740	.791	.757	.758	.773	.776	.784	.833	.808	.753	.741	.767
Average of 6 y'rs, '59 to '64, incl.	.851	.814	.793	.784	.761	.748	.769	.776	.762	.787	.813	.804	.788
Mean monthly amount of rain and melted snow .....													
1865.....	0.50	1.20	3.64	3.99	0.73	3.69	1.71	1.61	6.65	2.04	0.82	0.77	27.35
Average of 6 y'rs, '59 to '64, incl.	1.60	0.97	1.96	2.29	1.74	1.14	1.94	2.25	1.84	2.42	2.28	1.49	21.92

DETROIT, MICHIGAN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.													
1865.....	29.384	29.425	29.309	29.365	29.327	29.369	29.392	29.445	29.448	29.400	29.461	29.408	29.394
Av. of 5 y'rs, '60 to '64, inclusive.	29.389	29.374	29.299	29.323	29.284	29.334	29.339	29.370	29.414	29.378	29.327	29.421	29.354
Maximum rise of barometer.....													
1865.....	29.910	29.908	29.859	29.798	29.666	29.540	29.654	29.635	29.660	29.743	29.982	30.022	30.022
Highest in 5 y'rs, '60 to '64, incl.	29.971	29.976	29.814	29.958	29.702	29.782	29.666	29.786	29.869	29.932	30.029	30.039	30.039
Minimum fall of barometer.....													
1865.....	29.043	28.866	28.695	28.836	29.006	29.009	29.052	29.180	29.046	28.708	28.670	28.767	28.695
Lowest in 5 y'rs, '60 to '64, incl.	28.656	28.637	28.598	28.562	28.658	28.608	28.933	28.946	28.983	28.735	28.637	28.704	28.562
Mean monthly temperature.....													
1865.....	21°.	50°	28°.	00°	38°.	40°	48°.	20°	58°.	50°	72°.	30°	67°.
Av. of 5 y'rs, '60 to '64, inclusive.	26°.	27°	27°.	88°	34°.	02°	45°.	80°	58°.	02°	66°.	63°	70°.
Highest monthly maximum temperature.....													
1865.....	42°	48°	70°	74°	85°	91°	94°	89°	88°	78°	69°	59°	94°
Highest in 5 y'rs, '60 to '64, incl.	63°	64°	75°	89°	87°	95°	95°	98°	86°	82°	80°	64°	98°
Lowest monthly minimum temperature.....													
1865.....	1°	— 2°	9°	25°	33°	46°	45°	41°	42°	26°	21°	1°	— 2°
Lowest in 5 y'rs, '60 to '64, incl.	— 19°	— 14°	5°	12°	25°	38°	43°	37°	31°	23°	7°	— 4°	— 19°
Mean monthly elastic force of vapor.....													
1865.....	.079	.112	.176	.248	.351	.485	.487	.549	.360	.289	.200	.135	.286
Av. of 5 y'rs, '60 to '64, inclusive.	.124	.128	.146	.211	.312	.419	.513	.526	.399	.274	.176	.142	.281
Mean monthly relative humidity.....													
1865.....	.664	.708	.698	.707	.646	.628	.724	.763	.821	.781	.773	.745	.721
Av. of 5 y'rs, '60 to '64, inclusive.	.813	.785	.721	.668	.630	.649	.681	.704	.732	.728	.715	.784	.718
Mean monthly amount of rain and melted snow.....													
1865.....	0.33	0.86	2.08	1.92	1.40	1.18	3.37	3.46	2.52	3.52	0.05	1.41	21.10
Av. of 5 y'rs, '60 to '64, inclusive.	1.71	1.63	2.78	2.86	2.61	2.82	3.16	3.11	3.27	2.54	2.28	2.04	30.81

MONROE CITY, MICHIGAN.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.													
1865.....	29.407	29.455	29.329	29.383	29.321	29.375	29.394	29.448	29.453	29.388	29.447	29.419	29.401
Av. of 5 y'rs, '60 to '64, inclusive.	29.431	29.396	29.336	29.363	29.328	29.374	29.371	29.396	29.452	29.413	29.373	29.452	29.390
Maximum rise of barometer..													
1865.....	29.901	29.949	29.750	29.838	29.637	29.510	29.681	29.642	29.682	29.742	29.966	29.845	29.966
Highest in 5 y'rs, '60 to '64, incl..	29.998	30.027	29.947	29.990	29.759	29.767	29.690	29.720	29.881	29.928	30.059	30.201	30.101
Minimum fall of barometer..													
1865.....	28.998	28.924	28.643	28.862	28.912	29.077	28.983	29.170	29.040	28.757	28.732	28.758	28.643
Lowest in 5 y'rs, '60 to '64, incl..	28.676	28.643	28.628	28.648	28.711	28.704	28.922	28.962	29.022	28.791	28.724	28.663	28.628
Mean monthly temperature..													
1865.....	23° 30'	28° 80'	33° 80'	48° 70'	60° 00'	75° 20'	71° 60'	71° 40'	70° 80'	50° 50'	39° 60'	29° 10'	50° 81'
Av. of 5 y'rs, '60 to '64, inclusive.	26° 84'	28° 25'	34° 12'	45° 45'	59° 11'	67° 92'	72° 72'	72° 62'	62° 88'	51° 22'	40° 00'	30° 77'	79° 23'
Highest monthly maximum temperature .....	49°	53° 5'	75°	76° 5'	91°	96°	93°	97°	93°	86°	70°	54°	98°
Highest in 5 y'rs, '60 to '64, incl..	73°	54°	66°	76°	91° 5'	100° 5'	100°	99°	89°	80°	70° 5'	59°	100° 5'
Lowest monthly minimum temperature.....	-45°	-7°	7° 5'	24°	31° 5'	52°	46°	-40°	43°	24°	19°	-3°	-7°
Lowest in 5 y'rs, '60 to '64, incl..	-16°	-12°	4°	19° 5'	31°	38°	41°	34°	27°	24°	5°	-13°	-16°
Mean monthly elastic force of vapor.....	.098	.126	.181	.227	.348	.575	.554	.562	.629	.281	.178	.137	.324
Av. in 5 y'rs, '60 to '64, inclusive.	.129	.122	.145	.221	.344	.465	.559	.572	.434	.291	.183	.138	.300
Mean monthly relative humidity.....													
1865.....	.737	.762	.728	.664	.674	.663	.731	.734	.778	.753	.722	.759	.725
Av. of 5 y'rs, '60 to '64, inclusive.	.785	.750	.719	.713	.674	.678	.690	.716	.735	.738	.732	.751	.723
Mean monthly amount of rain and melted snow .....													
1865.....	0.47	0.96	2.23	1.84	2.38	2.75	5.33	3.56	7.59	2.35	0.39	3.51	33.36
Av. of 5 y'rs, '60 to '64, inclusive.	1.77	1.53	2.75	3.12	2.35	2.16	3.56	3.44	3.23	2.49	2.43	2.08	30.96

## CLEVELAND, OHIO.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.	29.332	29.377	29.268	29.332	29.255	29.328	29.315	29.360	29.407	29.316	29.385	29.362	29.337
Av. of 5 y'rs, '60 to '64, inclusive.	29.354	29.327	29.253	29.291	29.253	29.298	29.299	29.326	29.369	29.333	29.278	29.379	29.313
Maximum rise of barometer.	29.894	29.876	29.675	29.796	29.820	29.532	29.607	29.590	29.618	29.712	29.873	29.907	29.907
Highest in 5 y'rs, '60 to '64, incl.	29.961	29.936	29.726	29.894	29.654	29.703	29.663	29.699	29.797	29.843	29.962	30.016	30.016
Minimum fall of barometer.	28.849	28.845	28.504	28.861	28.872	29.020	28.928	29.070	29.057	28.632	28.680	28.879	28.594
Lowest in 5 y'rs, '60 to '64, incl.	28.731	28.685	28.535	28.847	28.640	28.622	28.905	28.875	28.903	28.773	28.512	28.621	28.512
Mean monthly temperature.	21° 00'	26° 80'	39° 50'	51° 00'	59° 40'	74° 36'	69° 50'	70° 10'	70° 80'	52° 40'	48° 10'	50° 32'	50° 88'
Av. of 5 y'rs, '60 to '64, inclusive.	28° 24'	30° 04'	35° 54'	46° 37'	58° 61'	66° 54'	71° 55'	71° 51'	62° 98'	52° 28'	40° 67'	32° 20'	49° 71'
Highest monthly maximum temperature.	43°	50°	76°	79°	91°	91°	90°	85°	86°	76°	74°	62°	91°
Highest in 5 y'rs, '60 to '64, incl.	66°	71°	75°	88°	91°	94°	93°	93°	87°	85°	75°	63°	94°
Lowest monthly minimum temperature.	—2°	—10°	9°	30°	32°	52°	50°	48°	50°	32°	20°	1°	—10°
Lowest in 5 y'rs, '60 to '64, incl.	—14°	—12°	9°	17°	31°	39°	48°	43°	35°	30°	5°	—9°	—17°
Mean monthly elastic force of vapor.	.087	.117	.217	.297	.394	.631	.579	.604	.637	.321	.218	.148	.354
Av. of 5 y'rs, '60 to '64, inclusive.	.134	.139	.164	.239	.366	.463	.588	.602	.463	.324	.205	.153	.323
Mean monthly relative humidity.	.726	.757	.809	.750	.749	.729	.784	.807	.829	.779	.761	.712	.766
Av. of 5 y'rs, '60 to '64, inclusive.	.802	.790	.754	.736	.718	.746	.751	.762	.779	.782	.762	.780	.763
Mean monthly amount of rain and melted snow.	2.01	1.82	3.17	3.03	2.44	2.77	3.63	1.47	5.46	2.35	0.76	3.89	32.77
Av. of 5 y'rs, '60 to '64, inclusive.	2.31	2.19	2.81	3.46	3.17	2.15	3.19	3.52	3.50	3.07	4.27	2.73	37.91

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.													
1865.....	29.320	29.406	29.291	29.369	29.291	29.362	29.344	29.395	29.437	29.323	29.329	29.374	29.359
Average of 5 y'rs, '60 to '64, incl.	29.383	29.370	29.301	29.362	29.307	29.334	29.340	29.374	29.419	29.367	29.318	29.407	29.357
Maximum rise of barometer..													
1865.....	29.856	29.908	29.764	29.827	29.680	29.595	29.681	29.663	29.704	29.758	30.007	29.761	30.007
Highest in 5 y'rs, '60 to '64, incl.	30.117	30.146	29.871	29.827	29.707	29.832	29.731	29.822	29.862	29.902	30.145	30.117	30.146
Minimum fall of barometer..													
1865.....	28.863	28.867	28.570	28.889	28.877	29.032	29.032	29.015	29.168	28.578	28.886	28.842	28.570
Lowest in 5 y'rs, '60 to '64, incl.	28.606	28.596	28.604	28.501	28.390	28.679	28.990	28.888	28.822	28.792	28.429	28.544	28.390
Mean monthly temperature ..													
1865.....	20° .20	22° .70	35° .90	44° .30	54° .20	68° .70	66° .70	68° .10	68° .10	47° .40	39° .90	31° .30	47° .29
Average of 5 y'rs, '60 to '64, incl.	26° .46	26° .60	31° .59	43° .52	55° .67	63° .91	69° .62	69° .15	60° .66	50° .19	39° .57	30° .21	47° .26
Highest monthly maximum temperature.....	43°	48°	65°	70°	78°	90°	85°	86°	90°	69°	66°	57°	90°
Highest in 5 y'rs, '60 to '64, incl.	55°	57°	66° .5	74°	86°	90°	93°	94°	89°	80°	73°	61°	96°
Lowest monthly minimum temperature.....	-13°	-12°	3°	25°	31°	47°	47°	40°	41°	24°	23°	8°	-13°
Lowest in 5 y'rs, '60 to '64, incl.	-12°	-22°	-2°	12°	26°	28°	48°	39°	28°	24°	9°	-4°	-22°
Mean monthly elastic force of vapor .....													
1865.....	.103	.126	.195	.234	.317	.505	.481	.488	.551	.256	.185	.150	.291
Average of 5 y'rs, '60 to '64, incl.	.121	.132	.143	.206	.324	.449	.553	.571	.436	.314	.208	.144	.300
Mean monthly relative humidity .....													
1865.....	.904	.952	.883	.773	.734	.718	.731	.703	.782	.747	.742	.794	.788
Average of 5 y'rs, '60 to '64, incl.	.828	.784	.757	.711	.717	.749	.761	.780	.785	.814	.787	.796	.781
Mean monthly amount of rain and melted snow .....													
1865.....	3.17	2.02	4.60	3.90	2.94	2.56	1.48	0.82	3.52	3.16	0.66	3.04	31.87
Average of 5 y'rs, '60 to '64, incl.	2.18	1.89	2.66	2.17	2.88	1.76	3.22	3.74	3.62	3.56	2.87	2.31	32.86



SACKETT'S HARBOR, NEW YORK.

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
Mean monthly height of barometer, reduced to 32° Fahr.	29.676	29.775	29.666	29.730	29.646	29.719	29.667	29.772	29.788	29.675	29.655	29.751	29.710
Av. of 5 y'rs, '60 to '64, inclusive.	29.716	29.708	29.647	29.211	29.633	29.636	29.646	29.687	29.742	29.717	29.651	29.755	29.687
Maximum rise of barometer.	30.245	30.318	30.186	30.250	30.106	29.918	30.043	30.043	30.133	30.162	30.054	30.191	30.318
Highest in 5 y'rs, '60 to '64, incl.	30.503	30.555	30.290	30.357	30.081	30.186	30.039	30.105	30.266	30.326	30.566	30.448	30.566
Minimum fall of barometer.	29.301	29.107	28.859	29.182	29.220	29.368	29.357	29.340	29.564	28.999	29.105	29.130	28.859
Lowest in 5 y'rs, '60 to '64, incl.	28.836	28.996	28.918	28.823	28.810	29.045	29.203	29.223	28.885	28.951	28.995	28.887	28.810
Mean monthly temperature.	17° 50'	20° 00'	36° 70'	47° 30'	56° 60'	69° 70'	69° 20'	72° 80'	68° 09'	47° 70'	41° 60'	31° 40'	48° 28'
Av. of 5 y'rs, '60 to '64, inclusive.	23° 39'	24° 16'	29° 42'	42° 37'	55° 68'	63° 71'	69° 47'	70° 29'	61° 47'	50° 85'	39° 82'	26° 87'	46° 42'
Highest monthly maximum temperature.	38°	48°	69°	70°	80°	88°	84°	89°	88°	66°	54°	58°	89°
Highest in 5 y'rs, '60 to '64, incl.	56°	52°	61°	70°	81°	85°	91°	93°	84°	82°	73°	61°	93°
Lowest monthly minimum temperature.	-15°	-40°	-9°	27°	33°	52°	48°	47°	39°	24°	17°	-3°	-40°
Lowest in 5 y'rs, '60 to '64, incl.	-36°	-46°	-34°	7°	25°	36°	50°	43°	28°	23°	10°	-14°	-46°
Mean monthly elastic force of vapor.	.060	.074	.149	.219	.316	.508	.477	.501	.506	.224	.178	.119	.277
Av. of 5 y'rs, '60 to '64, inclusive.	.099	.102	.125	.188	.298	.390	.498	.507	.380	.271	.197	.108	.263
Mean monthly relative humidity.	.503	.526	.612	.633	.661	.679	.664	.628	.694	.648	.664	.602	.626
Av. of 5 y'rs, '60 to '64, inclusive.	.698	.675	.706	.678	.652	.651	.673	.627	.675	.692	.707	.659	.678
Mean monthly amount of rain and melted snow.	1.58	1.22	3.94	3.30	2.59	4.02	2.28	0.56	1.73	4.78	2.26	2.30	30.62
Av. of 5 y'rs, '60 to '64, inclusive.	2.11	2.73	2.61	2.85	3.51	1.87	3.68	3.01	3.50	4.67	4.56	2.88	37.98





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REDUCTIONS .

OF THE

MONTHLY METEOROLOGICAL REGISTER

OF THE

SURVEY OF THE NORTH AND NORTHWESTERN LAKES.

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Reductions of the monthly meteorological register of the survey of

Date.		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
						Wet bulb, or point of evaporation.					Dry bulb, or temperature of the open air.					Elasticity, in U. S. inches and decimals.			
						7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.
1865.																			
July		1	29.293	29.301	29.298	29.297	52	63	58	53	66	60	59.7	73	46	372	536	456	456
	2	29.207	29.067	29.122	29.132	65	73	63	62	78	65	70.3	81	50	577	744	542	623	
	3	29.183	29.222	29.315	29.240	65	65	60	67	78	65	70.0	83	58	591	443	451	456	
	4	29.425	29.407	29.460	29.431	50	49	48	51	52	49	50.7	66	46	348	348	322	328	
	5	29.4	29.353	29.278	29.350	48	46	45	49	47	46	47.3	52	44	322	297	246	239	
	6	29.149	29.233	29.371	29.251	53	64	60	54	68	61	61.0	72	44	329	548	508	473	
	7	29.451	29.428	29.318	29.427	60	63	60	62	66	62	63.3	69	50	491	537	491	506	
	8	29.377	29.421	29.444	29.414	57	65	58	69	70	60	63.0	73	47	439	550	456	473	
	9	29.571	29.562	29.540	29.559	50	54	53	52	57	54	54.3	62	52	324	378	323	311	
	10	29.515	29.401	29.345	29.417	55	60	60	57	74	66	65.7	82	45	407	331	434	391	
	11	29.344	29.257	29.218	29.280	63	66	60	66	82	64	72.7	88	56	536	344	465	442	
	12	29.465	29.530	29.575	29.523	56	54	51	58	57	53	56.0	65	50	422	378	342	361	
	13	29.703	29.642	29.627	29.657	53	54	55	56	56	56	56.0	60	40	343	376	420	381	
	14	29.100	29.421	29.394	29.438	53	61	58	54	62	61	61.0	61	43	329	443	443	421	
	15	29.372	29.341	29.374	29.362	53	61	56	55	66	58	59.7	70	46	376	470	421	423	
	16	29.445	29.411	29.394	29.417	58	63	57	64	68	59	59.0	71	41	456	508	439	463	
	17	29.412	29.320	29.275	29.336	54	64	63	56	80	69	68.3	76	46	391	382	495	423	
	18	29.184	29.087	29.094	29.158	61	66	60	65	82	70	72.3	85	53	483	423	385	431	
	19	29.928	29.002	29.093	29.108	60	60	57	62	65	58	61.7	72	52	491	451	452	463	
	20	29.240	29.362	29.427	29.343	53	54	54	54	57	55	55.3	60	53	329	378	404	390	
	21	29.552	29.520	29.605	29.582	54	54	51	55	56	53	54.7	60	53	494	376	347	376	
	22	29.655	29.631	29.594	29.627	55	58	56	57	65	58	60.0	66	42	457	389	422	406	
	23	29.547	29.444	29.429	29.473	54	60	55	56	65	56	59.0	60	52	391	451	420	421	
	24	29.359	29.284	29.249	29.297	57	57	57	58	58	58	58.0	60	54	452	452	432	432	
	25	29.232	29.198	29.228	29.219	58	68	63	60	78	67	68.3	81	54	456	550	521	508	
	26	29.248	29.190	29.122	29.187	63	70	64	65	81	67	71.0	83	56	549	585	521	563	
	27	29.062	29.005	29.102	29.056	63	70	58	65	74	62	67.0	75	61	549	679	420	545	
	28	29.178	29.311	29.399	29.296	58	60	56	60	65	57	60.7	69	54	456	451	436	446	
	29	29.484	29.446	29.464	29.465	52	61	56	53	69	57	59.7	70	41	375	430	431	414	
	30	29.257	29.332	29.322	29.337	59	60	57	60	62	59	60.3	63	41	487	491	439	472	
	31	29.376	29.403	29.401	29.393	61	70	64	63	75	66	68.0	75	55	510	666	503	521	
Means...		29.362	29.342	29.351	29.352	...	...	...	58.4	67.4	59.7	61.8	...	...	439	463	440	447	
Aug.		1	29.384	29.326	29.301	29.337	57	60	56	58	61	57	58.7	68	55	452	505	436	464
	2	29.162	29.050	29.296	29.176	59	64	59	60	65	60	61.7	70	55	487	583	487	519	
	3	29.537	29.521	29.536	29.531	51	70	60	55	74	62	63.7	76	55	404	679	491	525	
	4	29.557	29.523	29.508	29.529	51	65	62	55	69	64	62.7	70	50	404	564	529	499	
	5	29.482	29.467	29.412	29.454	57	57	55	58	58	56	57.3	65	55	452	451	424	441	
	6	29.367	29.306	29.304	29.326	57	66	64	58	71	62	63.7	76	50	452	572	491	505	
	7	29.244	29.171	29.181	29.199	56	66	64	58	67	65	63.3	76	56	422	626	583	544	
	8	29.284	29.236	29.254	29.258	58	65	58	61	67	60	62.7	70	54	443	591	456	497	
	9	29.973	29.052	29.125	29.050	54	74	64	56	78	65	66.3	86	56	391	785	583	586	
	10	29.356	29.426	29.449	29.410	62	65	56	63	71	57	63.7	71	55	542	537	436	503	
	11	29.492	29.442	29.412	29.449	57	58	55	59	61	56	58.7	65	55	439	423	420	434	
	12	29.352	29.292	29.298	29.314	54	73	68	55	79	71	68.3	82	52	404	730	644	583	
	13	29.376	29.288	29.281	29.315	66	70	65	68	76	68	70.7	78	55	612	652	577	614	
	14	29.316	29.324	29.390	29.343	60	65	60	62	82	66	70.0	84	56	491	390	432	440	
	15	29.572	29.496	29.527	29.532	56	58	56	58	65	57	60.0	69	54	422	389	436	416	
	16	29.599	29.451	29.436	29.405	50	60	58	52	70	63	61.7	73	42	374	385	416	378	
	17	29.404	29.272	29.268	29.315	58	70	65	60	82	70	70.7	86	45	456	572	550	526	
	18	29.464	29.405	29.386	29.418	60	65	60	62	70	64	65.3	74	60	491	550	465	508	
	19	29.359	29.226	29.176	29.254	55	64	64	58	65	65	62.7	71	55	393	583	543	520	
	20	29.188	29.203	29.211	29.201	58	68	63	60	74	68	67.3	78	60	458	604	577	546	
	21	29.237	29.324	29.392	29.318	57	54	54	58	56	55	56.3	60	53	452	391	404	416	
	22	29.585	.....	29.490	29.538	51	...	47	52	...	49	50.5	64	48	361	...	297	329	
	23	29.477	29.451	29.449	29.459	48	65	55	51	77	58	62.0	77	43	296	457	393	368	
	24	29.467	29.350	29.348	29.388	54	68	62	55	79	66	66.7	80	56	404	537	502	481	
	25	29.476	29.257	29.262	29.332	63	64	70	68	86	74	76.0	86	64	577	677	679	644	
	26	29.431	29.430	29.471	29.444	62	65	62	68	77	67	70.7	77	65	476	457	489	474	
	27	29.532	29.499	29.424	29.485	58	58	57	60	60	58	59.3	68	56	456	456	459	455	
	28	29.367	29.339	29.314	29.343	56	58	58	57	60	59	58.7	60	55	436				

Mean of 30 observations.

*the northern and northwestern lakes, at Superior City, Wisconsin.*

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence:			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.932	.838	.880	.883	NW...	NE...	SW...	1.0	0.9	0.3	0.4	N. 15 W.	10	8	3	.120	.17
.843	.776	.890	.836	SE...	SW...	SW...	2.0	13.2	0.6	4.7	S. 35 W.	2	5	8	.215	.....
.893	.463	.731	.696	SW...	NW...	NE...	1.0	2.0	2.4	0.8	N. 9 W.	0	3	7	.165	.04
.929	.794	.926	.883	NE...	NE...	NE...	30.0	15.6	8.0	17.7	N. 45 E.	7	10	10	.195	.....
.926	.923	.921	.923	NE...	NE...	NE...	7.2	10.0	6.0	7.7	N. 45 E.	10	10	10	.....	.14
.933	.793	.941	.883	SW...	NW...	Calm...	1.0	6.0	0.0	2.0	N. 54 W.	10	10	10	.030	1.72
.884	.838	.884	.869	NW...	N...	N...	1.2	1.0	0.9	0.9	N. 16 W.	0	0	5	.210	.....
.878	.751	.880	.836	S...	NE...	NE...	0.6	2.0	0.3	0.6	N. 58 E.	0	6	8	.160	.....
.861	.812	.933	.869	NE...	NE...	NE...	2.0	1.2	0.3	1.1	N. 45 E.	9	5	7	.115	.....
.874	.395	.685	.651	N...	E...	Calm...	1.0	0.6	0.0	0.4	N. 32 E.	6	4	0	.230	.....
.838	.260	.780	.626	SW...	SW...	NE...	2.0	6.6	1.0	2.5	S. 45 W.	0	5	4	.315	.....
.876	.812	.864	.851	NE...	NE...	NE...	2.4	7.2	4.2	4.7	N. 45 E.	3	4	2	.145	.....
.809	.869	.935	.871	E...	E...	NE...	1.0	6.0	1.0	2.6	N. 85 E.	0	3	2	.165	.....
.933	.647	.825	.802	SW...	SW...	SW...	0.3	2.4	0.6	1.1	S. 45 W.	8	4	5	.050	.....
.869	.735	.876	.827	SW...	E...	NE...	0.9	6.0	1.0	2.0	N. 89 E.	4	3	3	.175	.....
.880	.743	.873	.834	E...	E...	NE...	1.0	0.3	0.6	0.6	N. 77 E.	0	0	0	.140	.....
.872	.374	.700	.649	SW...	SW...	SW...	2.0	5.4	2.0	3.0	S. 45 W.	3	3	0	.295	.....
.783	.389	.525	.556	SW...	SW...	SW...	3.0	8.4	4.0	5.0	S. 45 W.	0	3	0	.220	.....
.884	.731	.937	.851	SW...	NE...	NE...	1.0	0.6	3.0	0.9	N. 45 E.	7	4	8	.035	.24
.933	.812	.934	.893	NE...	NE...	NE...	6.0	10.0	1.0	5.7	N. 45 E.	6	5	7	.120	.....
.934	.869	.864	.889	NE...	NE...	NE...	1.0	6.0	2.0	3.0	N. 45 E.	8	3	9	.115	.....
.874	.631	.876	.794	NE...	NE...	NE...	0.9	0.3	2.4	1.2	N. 45 E.	3	6	8	.155	.....
.872	.731	.935	.846	NE...	E...	Calm...	1.0	1.2	0.0	0.7	N. 70 E.	4	3	10	.025	.05
.937	.937	.937	.937	NE...	NE...	NE...	2.0	2.4	4.2	2.8	N. 45 E.	10	10	10	.137	.96
.880	.574	.790	.748	SW...	NW...	Calm...	1.0	4.2	0.0	1.4	N. 58 W.	0	3	4	.....	.74
.890	.554	.841	.762	SW...	S...	Calm...	1.6	2.8	0.0	1.4	S. 16 W.	0	4	8	.150	.....
.890	.810	.772	.824	NW...	SW...	NW...	2.0	7.8	2.0	2.9	S. 72 W.	6	4	5	.240	.....
.880	.731	.936	.849	NW...	NW...	N...	3.0	5.4	0.3	3.7	N. 44 W.	4	6	8	.185	.....
.932	.607	.936	.825	SW...	E...	NE...	1.0	3.0	1.0	1.0	E. 81 ...	0	2	0	.....	.....
.940	.884	.878	.901	NE...	NE...	N...	3.0	5.4	0.6	2.9	N. 42 E.	0	3	0	.125	.....
.886	.768	.891	.848	SW...	E...	Calm...	1.0	1.0	0.0	0.2	S. 26 E.	10	4	2	.230	.....
.888	.705	.857	.817	.....	.....	.....	.....	.....	.....	1.1	N. 38 E.	4.2	4.6	5.3	1.462	4.06
.937	.941	.936	.938	E...	NE...	NE...	2.0	3.0	3.6	2.7	N. 55 E.	10	10	10	.035	.22
.940	.944	.940	.941	N...	NW...	SW...	1.0	2.0	1.0	0.9	N. 51 W.	10	10	0	.210	.31
.934	.810	.884	.876	SW...	NW...	NW...	0.6	2.4	0.3	0.9	N. 57 W.	0	0	0	.160	1.44
.934	.796	.888	.873	SW...	E...	Calm...	2.0	1.2	0.0	0.5	S. 8 E.	8	3	8	.115	.....
.937	.937	.935	.936	E...	NE...	NE...	1.6	2.4	6.0	3.2	N. 52 E.	10	10	10	.000	.....
.937	.754	.884	.858	E...	SE...	Calm...	1.0	2.0	0.0	0.9	S. 59 E.	10	4	0	.118	.06
.876	.946	.944	.922	SW...	NE...	Calm...	1.0	0.9	0.0	0.5	S. 45 W.	0	6	10	.065	.....
.825	.893	.880	.866	S...	NE...	NE...	0.3	2.0	2.4	1.4	N. 48 E.	0	2	5	.255	.08
.872	.819	.944	.878	SW...	SW...	SW...	2.0	8.4	1.0	3.8	S. 45 W.	6	8	5	.035	.70
.942	.708	.936	.862	NW...	NW...	NE...	2.4	2.0	4.2	2.0	N. 2 W.	0	0	0	.150	.04
.878	.825	.935	.879	NE...	NE...	NE...	1.0	4.0	6.6	3.9	N. 45 E.	0	0	5	.160	.....
.934	.738	.850	.841	SW...	S...	SW...	0.3	8.0	4.0	4.0	S. 15 W.	6	3	0	.165	.....
.895	.727	.843	.822	SW...	E...	NW...	0.9	1.0	0.6	0.2	N. 63 E.	0	0	3	.160	.....
.884	.357	.685	.642	SW...	W...	Calm...	2.0	8.4	0.0	3.3	S. 82 W.	0	0	0	.255	.....
.876	.631	.936	.814	N. NE.	NE...	Calm...	4.0	3.0	0.0	2.3	N. 32 E.	0	0	0	.117	.....
.861	.525	.723	.703	SW...	NE...	NE...	1.0	2.4	0.6	0.7	N. 45 E.	0	0	0	.188	.....
.880	.524	.751	.718	SW...	S. SW.	SW...	2.0	9.6	1.2	4.3	S. 26 W.	0	2	0	.175	.....
.884	.751	.780	.805	SW...	NE...	NE...	1.0	1.0	0.3	0.1	N. 45 E.	0	0	4	.165	.....
.816	.944	.944	.901	SW...	SW...	NE...	0.3	0.6	1.0	0.03	N. 45 E.	8	8	10	.....	.....
.880	.720	.843	.814	NW...	NW...	NW...	2.0	2.8	0.3	1.7	N. 45 W.	0	0	4	.110	.22
.937	.872	.934	.914	SE...	NE...	NE...	5.4	9.6	5.4	5.3	N. 64 E.	10	3	0	.100	.....
.930	.....	.853	.891	NE...	.....	Calm...	0.3	.....	0.0	0.1	N. 45 E.	0	0	0	.105	.....
.790	.493	.816	.700	S...	NE...	NE...	0.9	1.0	1.2	0.6	N. 67 E.	0	3	10	.100	.....
.934	.542	.786	.754	SW...	SW...	SW...	1.0	15.0	3.0	6.3	S. 45 W.	0	0	0	.210	.....
.843	.545	.810	.733	SW...	SW...	Calm...	0.6	6.6	0.0	2.4	S. 24 W.	0	4	10	.222	.....
.695	.493	.740	.643	N...	E...	Calm...	6.0	1.2	0.0	2.1	N. 12 E.	0	0	8	.198	.....
.880	.880	.937	.899	NE...	NE...	NE...	3.6	12.0	15.0	10.3	N. 45 E.	8	7	10	.030	.....
.936	.880	.939	.918	NE...	NE...	NE...	7.5	6.0	3.0	5.6	N. 45 E.	10	10	10	.015	.02
.937	.884	.937	.919	NE...	NE...	NE...	2.0	6.0	1.0	3.0	N. 45 E.	10	8	10	.040	.....
.888	.446	.603	.646	NW...	SW...	SW...	1.0	15.0	0.3	5.0	S. 47 W.	0	4	3	.245	.....
.880	.822	.893	.865	SW...	E...	Calm...	1.0	0.6	0.0	0.2	S. 7 W.	0	2	5	.151	.....
.890	*.738	.861	.831	.....	.....	.....	.....	.....	.....	0.4	N. 42 E.	3.4	3.4	4.8	4.054	3.09



*Reductions of the monthly meteorological register of the survey of*

Date.		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
						Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.			Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.					
						7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.			9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.
1865.						°	°	°	°	°	°	°	°	°					
July	1	29.293	29.301	29.298	29.297	52	63	58	53	66	60	59.7	73	46	372	536	456	455	
	2	29.207	29.067	29.122	29.132	65	73	63	68	78	65	70.3	81	50	577	744	542	623	
	3	29.183	29.222	29.315	29.240	65	65	60	67	78	65	70.0	83	58	591	443	451	464	
	4	29.425	29.407	29.460	29.431	50	49	48	51	52	49	50.7	66	46	348	328	322	326	
	5	29.418	29.353	29.278	29.350	48	46	45	49	47	46	47.3	52	44	322	297	286	319	
	6	29.149	29.233	29.371	29.251	53	64	60	54	68	61	61.0	72	44	329	548	505	474	
	7	29.451	29.428	29.398	29.427	60	63	60	62	66	62	63.3	69	50	491	527	491	506	
	8	29.377	29.421	29.444	29.414	57	65	58	69	70	60	63.0	73	47	439	550	456	492	
	9	29.574	29.562	29.540	29.559	50	54	53	52	57	54	54.3	62	52	324	378	329	361	
	10	29.545	29.401	29.345	29.417	55	60	60	57	74	66	65.7	82	45	407	311	438	382	
	11	29.344	29.257	29.218	29.280	63	66	60	66	88	64	72.7	88	56	536	344	465	448	
	12	29.465	29.530	29.575	29.523	56	54	51	58	57	53	56.0	65	50	422	378	348	382	
	13	29.703	29.642	29.627	29.657	53	54	55	56	56	56	56.0	60	40	333	376	420	363	
	14	29.100	29.421	29.394	29.438	53	61	58	54	68	61	61.0	61	43	389	443	443	425	
	15	29.372	29.341	29.374	29.362	53	61	56	55	66	58	59.7	70	46	376	470	429	423	
	16	29.445	29.411	29.394	29.417	58	63	57	64	68	59	59.0	71	41	456	502	439	462	
	17	29.412	29.320	29.275	29.336	54	64	63	56	80	69	68.3	76	46	391	382	492	423	
	18	29.184	29.087	28.994	29.088	61	66	60	65	82	70	72.3	85	53	483	425	385	431	
	19	28.928	29.002	29.093	29.008	60	60	57	62	65	58	61.7	72	52	491	451	452	465	
	20	29.240	29.362	29.427	29.343	53	54	54	54	57	55	55.3	60	53	389	378	404	392	
	21	29.552	29.590	29.605	29.582	54	54	51	55	56	53	54.7	60	53	494	376	341	376	
	22	29.655	29.631	29.594	29.627	55	58	56	57	65	58	60.0	66	42	457	389	422	406	
	23	29.547	29.444	29.429	29.473	54	60	55	56	65	56	59.0	60	52	391	451	430	421	
	24	29.359	29.284	29.249	29.297	57	57	57	58	58	58	58.0	60	54	452	452	452	452	
	25	29.232	29.198	29.228	29.219	58	68	63	60	78	67	68.3	81	54	456	550	521	508	
	26	29.248	29.190	29.122	29.187	63	70	64	65	81	67	71.0	83	56	549	585	555	563	
	27	29.062	29.005	29.102	29.056	63	70	58	65	74	62	67.0	75	61	519	679	420	542	
	28	29.178	29.311	29.399	29.296	58	60	56	60	65	57	60.7	69	54	456	451	436	448	
	29	29.484	29.446	29.464	29.465	52	61	56	53	69	57	59.7	70	41	375	434	431	414	
	30	29.357	29.332	29.322	29.337	59	60	57	60	62	59	60.3	63	41	487	491	439	472	
	31	29.376	29.403	29.401	29.393	61	70	64	63	75	66	68.0	75	55	510	666	529	528	
Means...		29.362	29.342	29.351	29.352	.....	.....	.....	58.4	67.4	59.7	61.8	.....	.....	439	463	440	447	
Aug.																			
	1	29.384	29.326	29.301	29.337	57	60	56	58	61	57	58.7	68	55	458	505	436	464	
	2	29.182	29.050	29.290	29.176	59	64	59	60	65	60	61.7	70	55	487	583	487	519	
	3	29.537	29.521	29.536	29.531	54	70	60	55	74	62	63.7	76	55	404	679	491	525	
	4	29.557	29.523	29.508	29.529	54	65	62	55	69	64	62.7	70	50	404	564	529	499	
	5	29.482	29.467	29.412	29.454	57	57	55	58	58	56	57.3	65	55	452	451	429	441	
	6	29.367	29.306	29.304	29.326	57	66	64	58	71	62	63.7	76	50	452	572	491	505	
	7	29.244	29.171	29.181	29.199	56	66	64	58	67	65	63.3	76	56	422	626	583	544	
	8	29.284	29.236	29.254	29.258	58	65	58	61	67	60	62.7	70	54	443	591	456	497	
	9	28.973	29.052	29.125	29.050	54	74	64	56	78	65	66.3	86	56	391	785	583	586	
	10	29.356	29.426	29.449	29.410	62	65	56	63	71	57	63.7	71	55	542	537	436	508	
	11	29.492	29.442	29.412	29.449	57	58	55	59	61	56	58.7	65	55	439	421	490	436	
	12	29.352	29.292	29.298	29.314	54	73	68	55	79	71	68.3	82	52	404	730	644	593	
	13	29.376	29.288	29.281	29.315	66	70	65	68	76	68	70.7	78	55	612	652	577	614	
	14	29.316	29.324	29.390	29.343	60	65	60	62	82	66	70.0	84	56	491	390	438	440	
	15	29.572	29.496	29.527	29.532	56	58	56	58	65	57	60.0	69	54	422	389	436	416	
	16	29.509	29.451	29.436	29.405	50	60	58	52	70	63	61.7	73	42	334	385	416	378	
	17	29.404	29.272	29.268	29.315	58	70	65	60	82	70	70.7	86	45	456	572	550	526	
	18	29.464	29.405	29.386	29.418	60	65	60	62	70	64	63.3	74	60	491	550	465	502	
	19	29.359	29.226	29.176	29.254	55	64	64	56	65	65	62.7	71	55	393	583	523	520	
	20	29.188	29.203	29.211	29.201	58	68	65	60	74	68	67.3	78	60	458	604	577	546	
	21	29.237	29.324	29.392	29.318	57	54	54	58	56	55	56.3	60	53	452	391	404	416	
	22	29.585	.....	29.490	29.538	51	.....	47	52	.....	49	50.5	64	48	361	.....	297	329	
	23	29.477	29.451	29.449	29.459	48	65	55	51	77	58	62.0	77	43	296	457	393	382	
	24	29.467	29.350	29.318	29.388	54	68	62	55	79	66	66.7	80	56	404	537	502	481	
	25	29.476	29.257	29.262	29.332	65	64	70	68	86	74	76.0	86	64	577	677	679	644	
	26	29.431	29.430	29.471	29.444	62	65	62	68	77	67	70.7	77	65	476	457	489	474	
	27	29.532	29.499	29.424	29.485	58	58	57	60	60	58	59.3	68	56	456	456	452	455	
	28	29.367	29.339	29.324	29.343	56	58	58											

Mean of 30 observations.

the northern and northwestern lakes, at Superior City, Wisconsin.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence:			Velocity, in miles per hour.			Resultant velocity. in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
.932	.838	.880	.883	NW...	NE...	SW...	1.0	0.9	0.3	0.4	N. 15 W.	10	8	3	.120	.17
.843	.776	.890	.836	SE...	SW...	SW...	2.0	13.2	0.6	4.7	S. 35 W.	2	5	8	.215	.....
.893	.463	.731	.696	SW...	NW...	NE...	1.0	2.0	2.4	0.8	N. 9 W.	0	3	7	.165	.04
.929	.794	.926	.883	NE...	NE...	NE...	30.0	15.6	2.0	17.7	N. 45 E.	7	10	10	.195	.....
.926	.923	.921	.923	NE...	NE...	NE...	7.2	10.0	6.0	7.7	N. 45 E.	10	10	10	.....	.14
.933	.793	.941	.889	SW...	NW...	Calm...	1.0	6.0	0.0	2.0	N. 54 W.	10	10	10	.030	1.72
.884	.838	.884	.869	NW...	N...	N...	1.2	1.0	0.9	0.9	N. 16 W.	0	0	5	.210	.....
.878	.751	.880	.836	S...	NE...	NE...	0.6	2.0	0.3	0.6	N. 58 E.	0	6	8	.160	.....
.861	.812	.933	.869	NE...	NE...	NE...	2.0	1.2	0.3	1.1	N. 45 E.	9	5	7	.115	.....
.874	.395	.685	.651	N...	E...	Calm...	1.0	0.6	0.0	0.4	N. 32 E.	6	4	0	.230	.....
.838	.260	.780	.626	SW...	SW...	NE...	2.0	6.6	1.0	2.5	S. 45 W.	0	5	4	.315	.....
.876	.812	.864	.851	NE...	NE...	NE...	2.4	7.2	4.2	4.7	N. 45 E.	3	4	2	.145	.....
.809	.869	.935	.871	E...	E...	NE...	1.0	6.0	1.0	2.6	N. 85 E.	0	3	2	.165	.....
.933	.647	.825	.802	SW...	SW...	SW...	0.3	2.4	0.6	1.1	S. 45 W.	8	4	5	.050	.....
.869	.735	.876	.827	SW...	E...	NE...	0.9	6.0	1.0	2.0	N. 89 E.	4	3	3	.175	.....
.880	.743	.873	.834	E...	E...	NE...	1.0	0.3	0.6	0.6	N. 77 E.	0	0	0	.140	.....
.872	.374	.700	.649	SW...	SW...	SW...	2.0	5.4	2.0	3.0	S. 45 W.	3	3	0	.295	.....
.783	.389	.525	.556	SW...	SW...	SW...	3.0	8.4	4.0	5.0	S. 45 W.	0	3	0	.220	.....
.884	.731	.937	.851	SW...	NE...	NE...	1.0	0.6	3.0	0.9	N. 45 E.	7	4	8	.035	.24
.933	.812	.934	.893	NE...	NE...	NE...	6.0	10.0	1.0	5.7	N. 45 E.	6	5	7	.120	.....
.934	.869	.864	.889	NE...	NE...	NE...	1.0	6.0	2.0	3.0	N. 45 E.	8	3	9	.115	.....
.874	.631	.876	.794	NE...	NE...	NE...	0.9	0.3	2.4	1.2	N. 45 E.	3	6	8	.155	.....
.872	.731	.935	.846	NE...	E...	Calm...	1.0	1.2	0.0	0.7	N. 70 E.	4	3	10	.025	.05
.937	.937	.937	.937	NE...	NE...	NE...	2.0	2.4	4.2	2.8	N. 45 E.	10	10	10	.137	.96
.880	.574	.790	.748	SW...	NW...	Calm...	1.0	4.2	0.0	1.4	N. 58 W.	0	3	4	.....	.74
.890	.554	.841	.762	SW...	S...	Calm...	1.6	2.8	0.0	1.4	S. 16 W.	0	4	8	.150	.....
.890	.810	.772	.824	NW...	SW...	NW...	2.0	7.8	2.0	2.9	S. 72 W.	6	4	5	.240	.....
.880	.731	.936	.849	NW...	NW...	N...	3.0	5.4	0.3	3.7	N. 44 W.	4	6	8	.185	.....
.932	.607	.936	.825	SW...	E...	NE...	1.0	3.0	1.0	1.1	E. 81	0	2	0	.....	.....
.940	.884	.878	.901	NE...	NE...	N...	3.0	5.4	0.6	2.9	N. 42 E.	0	3	0	.125	.....
.886	.768	.891	.848	SW...	E...	Calm...	1.0	1.0	0.0	0.2	S. 26 E.	10	4	2	.230	.....
.888	.705	.857	.817	.....	.....	.....	.....	.....	.....	1.1	N. 38 E.	4.2	4.6	5.3	4.462	4.06
.937	.941	.936	.938	E...	NE...	NE...	2.0	3.0	3.6	2.7	N. 55 E.	10	10	10	.035	.22
.940	.944	.940	.941	N...	NW...	SW...	1.0	2.0	1.0	0.9	N. 51 W.	10	10	0	.210	.31
.934	.810	.884	.876	SW...	NW...	NW...	0.6	2.4	0.3	0.9	N. 57 W.	0	0	0	.160	1.44
.934	.796	.888	.873	SW...	E...	Calm...	2.0	1.2	0.0	0.5	S. 8 H	8	3	8	.115	.....
.937	.937	.935	.936	E...	NE...	NE...	1.6	2.4	6.0	3.2	N. 52 E.	10	10	10	.000	.....
.937	.754	.884	.858	E...	SE...	Calm...	1.0	2.0	0.0	0.9	S. 59 E.	10	4	0	.118	.06
.876	.946	.944	.922	SW...	NE...	Calm...	1.0	0.9	0.0	0.5	S. 45 W.	0	6	10	.065	.....
.825	.893	.880	.866	S...	NE...	NE...	0.3	2.0	2.4	1.4	N. 48 E.	0	2	5	.255	.08
.872	.819	.944	.878	SW...	SW...	SW...	2.0	8.4	1.0	3.8	S. 45 W.	6	8	5	.035	.70
.942	.708	.936	.862	NW...	NW...	NE...	2.4	2.0	4.2	2.0	N. 2 W.	0	0	0	.150	.04
.878	.825	.935	.879	NE...	NE...	NE...	1.0	4.0	6.6	3.9	N. 45 E.	0	0	5	.160	.....
.934	.738	.850	.841	SW...	S...	SW...	0.3	8.0	4.0	4.0	S. 15 W.	6	3	0	.165	.....
.895	.727	.843	.822	SW...	E...	NW...	0.9	1.0	0.6	0.2	N. 63 E.	0	0	3	.160	.....
.884	.357	.685	.642	SW...	W...	Calm...	2.0	8.4	0.0	3.3	S. 82 W.	0	0	0	.255	.....
.876	.631	.936	.814	N. NE.	NE...	Calm...	4.0	3.0	0.0	2.3	N. 32 E.	0	0	0	.117	.....
.861	.525	.723	.703	SW...	NE...	NE...	1.0	2.4	0.6	0.7	N. 45 E.	0	0	0	.188	.....
.880	.524	.751	.718	SW...	S. SW.	SW...	2.0	9.6	1.2	4.3	S. 26 W.	0	2	0	.175	.....
.884	.751	.780	.805	SW...	NE...	NE...	1.0	1.0	0.3	0.1	N. 45 E.	0	0	4	.165	.....
.816	.944	.944	.901	SW...	SW...	NE...	0.3	0.6	1.0	0.05	N. 45 E.	8	8	10	.....	.....
.880	.720	.843	.814	NW...	NW...	NW...	2.0	2.8	0.3	1.7	N. 45 W.	0	0	4	.110	.22
.937	.872	.934	.914	SE...	NE...	NE...	5.4	9.6	5.4	5.3	N. 64 E.	10	3	0	.100	.....
.930	.....	.853	.891	NE...	.....	Calm...	0.3	.....	0.0	0.1	N. 45 E.	0	0	0	.105	.....
.790	.493	.816	.700	S...	NE...	NE...	0.9	1.0	1.2	0.6	N. 67 E.	0	3	10	.100	.....
.934	.542	.786	.754	SW...	SW...	SW...	1.0	15.0	3.0	6.3	S. 45 W.	0	0	0	.210	.....
.843	.545	.810	.733	SW...	SW...	Calm...	0.6	6.6	0.0	2.4	S. 24 W.	0	4	10	.222	.....
.695	.493	.740	.643	N...	E...	Calm...	6.0	1.2	0.0	2.1	N. 12 E.	0	0	8	.198	.....
.880	.880	.937	.899	NE...	NE...	NE...	3.6	12.0	15.0	10.3	N. 45 E.	8	7	10	.030	.....
.936	.880	.939	.918	NE...	NE...	NE...	7.5	6.0	3.0	5.6	N. 45 E.	10	10	10	.015	.02
.937	.884	.937	.919	NE...	NE...	NE...	2.0	6.0	1.0	3.0	N. 45 E.	10	8	10	.040	.....
.888	.446	.603	.646	NW...	SW...	SW...	1.0	15.0	0.3	5.0	S. 47 W.	0	4	3	.245	.....
.880	.822	.893	.865	SW...	E...	Calm...	1.0	0.6	0.0	0.2	S. 7 W.	0	2	5	.151	.....
.890	.738	.861	.831	.....	.....	.....	.....	.....	.....	0.4	N. 42 E.	3.4	3.4	4.8	4.051	3.09

## REPORT OF THE SECRETARY OF WAR.

*Reduction of the monthly meteorological register of the survey of*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches in decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1865.					°	°	°	°	°	°	°	°	°					
Sept.	1	29.326	29.201	29.191	29.239	63	65	62	64	69	64	65.7	70	60	562	564	526	551
	2	29.135	29.073	29.050	29.086	61	67	64	63	71	65	66.3	75	57	510	608	563	561
	3	29.030	29.008	29.088	29.042	68	63	63	70	64	64	66.0	73	62	638	562	562	561
	4	29.244	29.195	29.261	29.233	55	59	54	56	76	56	62.7	74	50	420	274	391	363
	5	29.174	29.092	29.128	29.131	57	66	53	58	81	64	67.7	82	51	452	438	403	431
	6	29.165	29.125	29.158	29.149	58	66	62	64	72	64	66.7	72	55	403	552	526	491
	7	29.194	29.128	29.131	29.151	58	62	58	60	64	60	61.3	64	56	456	524	456	491
	8	29.186	29.174	29.231	29.197	58	60	57	60	62	58	60.0	65	56	456	491	452	464
	9	29.217	29.226	29.172	29.205	57	59	57	58	60	58	58.7	60	57	452	487	452	464
	10	28.878	28.998	28.983	28.953	60	59	60	62	70	62	64.7	71	58	491	354	491	445
	11	29.066	29.087	29.123	29.092	53	60	53	59	76	54	63.0	77	55	323	305	389	339
	12	29.148	29.065	29.028	29.080	53	61	60	55	64	62	60.3	65	45	376	417	491	433
	13	29.396	29.373	.....	29.384	54	64	.....	59	70	.....	64.5	.....	.....	351	516	.....	433
	14	29.524	29.506	29.509	29.513	55	64	60	56	69	62	62.3	75	48	420	524	491	480
	15	29.552	29.434	29.399	29.462	53	61	59	54	63	60	59.0	67	51	389	510	487	462
	16	29.191	29.147	29.273	29.204	72	75	68	75	84	70	79.7	88	51	744	746	658	716
	17	29.592	29.624	29.657	29.624	54	50	50	55	55	52	54.0	71	50	404	295	334	344
	18	29.711	29.537	29.474	29.574	42	58	52	44	61	55	53.3	64	36	241	443	341	340
	19	29.435	29.365	29.311	29.370	54	61	60	55	65	62	60.7	73	45	404	483	491	459
	20	29.249	29.220	29.246	29.238	58	68	62	60	75	64	66.3	76	56	456	591	524	525
	21	29.279	29.334	29.376	29.330	57	58	58	58	59	58	58.3	65	58	452	469	482	464
	22	29.387	29.319	29.359	29.355	55	57	55	56	58	56	56.7	58	54	420	452	424	431
	23	29.357	29.276	29.246	29.293	55	65	61	56	67	62	61.7	75	54	420	564	523	514
	24	29.264	29.306	29.379	29.316	58	63	53	60	71	60	63.7	73	55	456	464	462	465
	25	29.530	29.457	29.447	29.478	45	58	55	46	60	56	54.0	62	40	286	456	436	380
	26	29.440	29.362	29.372	29.391	55	60	57	56	62	58	58.7	63	53	420	491	452	454
	27	29.372	29.326	29.309	29.336	59	60	60	60	61	61	60.7	64	55	487	505	505	495
	28	29.268	29.165	29.170	29.201	67	68	.....	68	70	.....	69.0	.....	.....	648	658	.....	633
	29	29.240	29.301	29.334	29.292	52	54	48	53	56	49	52.7	75	48	375	391	335	367
	30	29.315	29.261	29.242	29.273	47	57	50	48	68	51	55.7	69	53	310	514	348	391
Means....		29.295	29.256	29.264	29.273	.....	.....	.....	58.3	66.8	59.6	61.8	.....	.....	441	492	466	462
Oct.	1	29.314	29.267	29.303	29.295	43	52	47	45	61	48	51.3	65	38	251	269	310	277
	2	29.355	29.383	29.368	29.369	30	48	44	31	53	45	43.0	56	28	155	289	275	235
	3	29.422	29.415	29.453	29.430	37	50	48	38	55	50	47.7	56	36	207	295	308	270
	4	29.501	29.473	29.480	29.484	44	51	50	45	56	52	51.0	56	34	275	304	334	306
	5	29.463	29.453	29.445	29.454	52	52	52	53	53	53	53.0	55	48	375	375	375	353
	6	29.340	29.209	29.264	29.271	52	60	60	53	62	63	59.3	63	57	375	491	478	448
	7	29.452	29.472	29.487	29.470	52	52	49	53	54	50	52.3	63	48	375	362	335	357
	8	29.398	29.215	29.155	29.256	37	52	49	38	54	50	47.7	57	33	207	362	335	301
	9	29.069	29.038	29.096	29.068	39	60	54	40	62	56	52.0	63	36	225	491	391	364
	10	29.273	29.313	29.323	29.303	54	52	53	55	53	54	54.0	58	50	404	375	384	384
	11	29.340	29.342	29.455	29.379	52	52	51	53	56	52	53.7	57	48	375	335	361	357
	12	29.511	29.493	29.477	29.494	46	47	46	47	48	47	47.3	50	44	297	310	297	301
	13	29.455	29.372	29.290	29.372	44	52	40	45	53	41	46.3	54	40	275	375	235	265
	14	29.155	29.202	29.368	29.242	50	55	45	51	56	47	51.3	58	40	348	434	274	341
	15	29.524	29.481	29.443	29.483	37	45	37	38	48	39	41.7	50	35	207	260	194	200
	16	29.386	29.298	29.230	29.305	32	47	47	33	49	48	43.3	50	30	168	297	310	258
	17	29.032	29.053	29.223	29.103	48	49	44	49	50	45	48.0	50	40	322	335	275	311
	18	29.249	29.111	28.976	29.112	37	49	41	38	53	43	44.7	55	37	297	293	231	244
	19	28.857	28.921	29.019	28.912	42	47	41	44	57	43	48.0	58	40	241	191	231	221
	20	29.167	29.185	29.328	29.227	38	45	36	40	55	37	44.0	56	35	216	168	199	194
	21	29.584	29.523	29.508	29.538	34	43	37	36	47	38	40.3	50	25	170	225	207	207
	22	29.486	29.438	29.493	29.472	37	41	33	38	47	35	40.0	50	30	207	179	162	184
	23	29.685	29.668	29.709	29.687	34	38	35	35	41	36	37.3	44	33	183	190	191	188
	24	29.745	29.731	29.684	29.720	30	42	40	31	43	41	38.3	45	26	155	251	235	215
	25	29.629	29.581	29.574	29.595	35	40	40	36	42	42	40.0	44	34	191	221	221	211
	26	29.708	29.694	29.720	29.707	33	34	33	34	34	34	34.0	40	30	175	196	175	184
	27	29.658	29.519	29.515	29.564	34	35	35	35	37	36	36.0	38					

\* Mean of 29 observations.

Mean of 28 observations.

be northern and northwestern lakes, at Superior City, Wisconsin.

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
.943	.796	.888	.876	E. ....	NE. ....	NE. ....	0.3	1.0	3.0	1.4	N. 48 E.	4	6	2	.130	
.886	.802	.944	.877	NE. ....	NE. ....	NE. ....	1.0	6.0	0.3	2.4	N. 45 E.	0	4	10	.060	
.838	.943	.943	.928	NE. ....	NE. ....	NE. ....	3.6	2.8	1.0	2.4	N. 45 E.	0	10	5	.031	.18
.935	.305	.872	.704	SW. ....	W. ....	SW. ....	2.0	13.2	2.0	5.7	S. 81 W.	0	0	3	.215	.06
.937	.415	.675	.676	SW. ....	SW. ....	Calm.	2.4	10.8	0.0	4.3	S. 45 W.	5	3	0	.225	
.675	.712	.828	.758	SW. ....	NE. ....	NE. ....	6.0	0.6	1.0	1.5	S. 45 W.	0	0	0	.140	
.820	.828	.880	.883	NE. ....	NE. ....	NE. ....	3.0	2.4	2.8	2.8	N. 45 E.	10	10	10	.035	
.880	.824	.937	.900	NE. ....	NE. ....	NE. ....	2.0	6.0	4.2	4.0	N. 45 E.	10	10	10	.085	
.937	.940	.937	.938	NE. ....	NE. ....	NE. ....	3.0	7.2	3.0	4.3	N. 45 E.	10	10	10		
.824	.822	.824	.883	NW. ....	SW. ....	SW. ....	2.0	8.4	3.6	4.0	S. 53 W.	8	3	0	.067	.94
.647	.340	.993	.640	SW. ....	S. ....	Calm.	13.2	15.0	0.0	8.7	S. 21 W.	0	0	0	.410	
.869	.883	.824	.862	NW. ....	E. ....	NE. ....	1.0	0.9	0.3	0.3	N. 25 E.	0	8	7	.050	
.703	.704	.....	.704	SW. ....	E. ....	.....	2.0	0.3	.....	0.6	S. 39 W.	5	7	.....		
.935	.747	.884	.855	SW. ....	Calm.	SW. ....	1.0	0.0	1.2	0.7	S. 45 W.	0	0	0	.043	2.02
.933	.886	.940	.920	SW. ....	NE. ....	NE. ....	1.0	1.8	6.8	2.5	N. 45 E.	8	9	6	.022	
.838	.640	.838	.799	SW. ....	SW. ....	SW. ....	8.4	8.0	1.0	5.8	S. 45 W.	4	7	3	.440	
.934	.681	.861	.825	NE. ....	NE. ....	NE. ....	6.4	10.8	7.2	8.1	N. 45 E.	10	0	0	.000	.43
.836	.825	.805	.822	SW. ....	E. ....	Calm.	0.6	1.0	0.0	0.2	S. 57 E.	10	0	0	.020	
.934	.783	.784	.867	S. ....	SE. ....	SW. ....	0.3	3.0	6.0	2.3	S. 18 W.	8	5	8		
.880	.681	.828	.816	SW. ....	SW. ....	Calm.	2.0	4.8	0.0	2.3	S. 45 W.	3	3	10	.130	.18
.937	.939	1.000	.956	SW. ....	NE. ....	NE. ....	0.3	2.4	6.8	3.0	S. 45 E.	8	10	10		
.935	.937	.935	.936	NE. ....	NE. ....	NE. ....	4.2	3.6	0.6	2.7	N. 45 E.	10	10	10	.030	.20
.935	.891	.942	.923	SW. ....	NE. ....	SW. ....	0.3	2.4	3.0	0.3	S. 45 W.	10	0	10	.040	
.880	.618	.939	.812	SW. ....	SW. ....	NW. ....	1.0	6.0	5.4	3.0	S. 83 W.	0	3	3	.105	.45
.921	.880	.936	.912	SW. ....	NW. ....	NE. ....	1.0	4.8	7.2	2.3	N. 7 E.	0	0	5	.175	
.935	.884	.937	.919	NE. ....	NE. ....	Calm.	1.2	2.8	0.0	1.3	N. 45 E.	7	5	10	.010	
.940	.941	.941	.941	NE. ....	NE. ....	Calm.	2.0	0.6	0.0	0.9	N. 45 E.	4	10	8	.010	
.947	.898	.....	.923	S. ....	E. ....	NW. ....	0.6	1.2	4.8	1.2	N. 38 W.	10	10	10		
.932	.872	.937	.914	W. ....	NW. ....	SW. ....	3.0	4.2	1.0	2.3	N. 71 W.	8	5	0	.210	1.76
.925	.537	.929	.797	SW. ....	W. ....	W. ....	4.0	8.4	1.0	4.2	S. 77 W.	0	5	0	.000	
.826	.778	.903	.854	.....	.....	.....	.....	.....	.....	0.3	N. 62 W.	5.1	5.1	5.2	2.681	6.22
.840	.502	.925	.759	NW. ....	NW. ....	NW. ....	1.0	1.2	0.6	0.6	N. 45 W.	0	0	0	.045	
.893	.667	.920	.827	NW. ....	E. ....	E. ....	0.6	2.0	1.0	0.9	N. 81 E.	0	0	0	.050	
.905	.621	.856	.814	E. ....	E. ....	NE. ....	0.6	3.2	5.4	2.9	N. 63 E.	5	4	0	.090	
.920	.687	.861	.823	E. ....	E. ....	NE. ....	1.0	7.2	4.2	4.0	N. 77 E.	0	0	0	.085	
.932	.932	.932	.932	E. ....	NE. ....	NE. ....	3.0	5.4	4.0	3.5	N. 55 E.	10	10	10	.005	
.932	.881	.831	.882	NW. ....	NW. ....	SW. ....	0.6	2.8	3.0	1.5	N. 87 W.	10	8	7	.043	
.932	.867	.927	.909	NE. ....	NE. ....	NE. ....	1.0	3.0	2.0	2.6	N. 45 E.	10	3	4	.047	
.905	.867	.927	.900	NE. ....	NE. ....	NE. ....	1.0	0.6	4.0	1.9	N. 45 E.	0	0	0	.050	
.910	.824	.872	.829	N. ....	NE. ....	NE. ....	0.3	1.2	0.6	0.7	N. 38 E.	0	0	0	.045	
.934	.932	.933	.933	NE. ....	NE. ....	NE. ....	3.0	9.0	8.4	6.8	N. 45 E.	10	10	10	.000	
.932	.747	.930	.870	NE. ....	NE. ....	NE. ....	0.6	2.0	5.4	2.7	N. 45 E.	10	10	10	.035	
.927	.925	.927	.926	E. ....	NE. ....	NE. ....	20.0	7.2	2.0	9.0	N. 76 E.	10	10	10	.050	.06
.920	.932	.912	.921	E. ....	SW. ....	Calm.	0.3	1.0	0.0	0.3	S. 31 W.	10	8	9	.030	
.929	.935	.847	.904	W. ....	NE. ....	NE. ....	2.0	2.4	8.4	3.0	N. 37 E.	10	8	5	.035	.13
.905	.777	.816	.833	E. ....	E. ....	E. ....	1.0	1.2	0.3	0.8	E. ....	0	0	0	.045	
.893	.853	.925	.890	S. ....	Calm.	Calm.	1.0	0.0	0.0	0.1	S. ....	7	10	10		
.925	.927	.920	.924	NE. ....	NE. ....	NE. ....	2.4	20.0	25.0	16.5	N. 45 E.	10	10	10	.075	.13
.905	.733	.833	.824	NW. ....	SW. ....	SW. ....	2.0	4.2	2.0	2.0	S. 61 W.	10	0	10	.090	.44
.836	.411	.833	.693	NW. ....	NW. ....	NW. ....	4.2	6.0	1.0	3.7	N. 45 W.	0	0	0	.120	
.917	.388	.903	.733	NW. ....	NW. ....	NW. ....	2.0	6.0	2.0	3.3	N. 45 W.	0	0	0	.095	
.802	.698	.905	.802	W. ....	Calm.	Calm.	1.0	0.0	0.0	0.3	W. ....	0	5	10	.045	
.905	.554	.797	.752	NW. ....	SW. ....	NW. ....	2.0	3.0	4.2	2.3	N. 71 W.	10	4	8	.018	
.898	.738	.900	.845	NE. ....	NE. ....	NE. ....	1.0	3.6	1.0	1.9	N. 45 E.	4	5	3	.007	
.893	.916	.912	.907	SE. ....	NE. ....	NE. ....	1.0	9.6	15.0	8.3	N. 49 E.	8	10	10	.040	
.900	.829	.829	.853	NE. ....	NE. ....	NE. ....	6.0	15.4	9.6	10.3	N. 45 E.	10	10	10	.083	.06
.895	1.000	.895	.930	NE. ....	NE. ....	NE. ....	15.0	15.0	15.0	15.0	N. 45 E.	10	10	10	.082	
.898	.807	.900	.868	NE. ....	NE. ....	NE. ....	4.2	7.2	10.0	7.1	N. 45 E.	10	10	10	.075	
.823	.471	.905	.733	NW. ....	NW. ....	Calm.	1.0	3.0	0.0	1.3	N. 45 W.	10	0	0	.015	
.782	.850	.876	.836	NW. ....	SW. ....	Calm.	2.0	3.6	0.0	1.4	S. 73 W.	0	0	0	.085	
.860	.400	.823	.714	SW. ....	SW. ....	SW. ....	1.0	3.6	0.6	1.7	S. 45 W.	0	0	0	.020	
.880	.557	.807	.748	Calm.	SW. ....	Calm.	0.0	2.4	0.0	0.8	S. 45 W.	10	5	10		
.896	.753	.885	.845	.....	.....	.....	.....	.....	.....	2.8	N. 42 E.	5.9	4.8	5.3	1.505	0.22



## Reductions of the monthly meteorological register of the survey

Date.	TEMPERATURE—FÄHRENHEIT.													VAPOR.			
	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.			Mean.	Maximum.	Minimum.	Elasticity, in l. & inches and decimals.			
	7 a. m.	2 p. m.	10 p. m.	Mean.	7 a. m.	8 a. m.	9 p. m.	7 a. m.	8 a. m.	9 p. m.				7 a. m.	2 p. m.	10 p. m.	Mean.
1866.																	
Jan.																	
1	29.592	29.527	29.472	29.530	0	0	0	0	0	0	0	0	0	0.12	0.40	0.30	0.27
2	29.115	29.104	29.301	29.175	0	0	14	0	31	15	10.3	33	-7	0.51	1.19	0.71	0.8
3	29.586	29.577	29.650	29.604	-1	0	-3	0	10	-1	4.0	18	-3	0.10	0.40	0.28	0.26
4	29.907	29.841	29.851	29.866	-18	1	-11	-17	2	-10	8.3	3	-18	0.07	0.34	0.4	0.1
5	29.725	29.634	29.631	29.666	-11	7	8	-10	2	10	2.7	10	-8	0.14	0.41	0.40	0.34
6	29.686	29.761	29.967	29.804	4	20	15	-3	21	16	11.3	21	-5	0.25	0.60	0.74	0.85
7	30.243	30.281	30.342	30.289	0	15	6	10	16	7	11.0	19	7	0.40	0.74	0.66	0.73
8	30.371	30.177	30.046	30.198	-11	20	18	-10	24	20	11.3	25	-13	0.14	0.62	0.76	0.61
9	29.819	29.764	29.708	29.775	17	22	20	19	24	22	21.3	25	17	0.23	0.95	0.85	0.84
10	29.446	29.421	29.440	29.437	22	24	27	23	31	28	27.3	35	20	1.07	1.42	1.16	1.17
11	29.456	29.383	29.331	29.389	24	29	25	25	30	26	27.0	31	25	1.17	1.40	1.23	1.30
12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13	.....	29.279	29.723	29.501	.....	3	0	.....	4	-1	1.5	30	-4	.....	0.38	.....	0.38
14	29.759	29.727	29.677	29.721	-1	11	8	0	12	9	7.0	14	-4	0.30	0.61	0.51	0.47
15	29.967	29.000	29.944	29.000	11	19	15	12	20	16	16.0	21	9	0.61	0.82	0.74	0.76
16	29.255	29.274	29.317	29.282	7	13	3	8	14	4	8.7	20	2	0.24	0.67	0.38	0.46
17	29.204	29.257	29.253	29.238	-10	1	-8	-9	2	-7	-4.7	10	-10	0.16	0.34	0.18	0.25
18	29.269	29.280	29.263	29.254	-13	5	-8	-14	-4	-7	-1.0	0	-5	0.07	0.23	0.18	0.26
19	29.138	29.012	29.018	29.056	-4	-2	-9	-3	3	-8	-2.7	5	-10	0.25	0.34	0.17	0.26
20	29.394	29.479	29.632	29.502	-19	-10	-16	-18	-9	-15	-14.0	5	-20	0.06	0.16	0.09	0.10
21	29.624	29.549	29.549	29.557	-21	1	-5	-20	2	-4	-7.3	9	-23	0.04	0.34	0.23	0.20
22	29.592	29.508	29.644	29.611	-19	8	-10	-18	9	-8	-5.7	11	-20	0.06	0.51	0.46	0.51
23	29.715	29.643	29.654	29.670	-11	8	-6	-10	10	-5	-1.7	20	-15	0.14	0.4	0.21	0.25
24	29.501	29.347	29.349	29.402	2	17	13	3	18	14	11.7	18	-5	0.16	0.63	0.67	0.62
25	29.367	29.046	29.271	29.261	12	20	19	13	21	20	18.0	23	12	0.1	0.66	0.42	0.44
26	29.364	29.420	29.443	29.409	16	25	11	17	27	19	18.7	31	12	0.78	1.12	1.01	1.04
27	29.337	29.140	29.050	29.176	14	30	33	15	31	34	26.7	4	8	0.71	1.55	1.75	1.34
28	29.103	29.107	29.142	29.118	28	35	29	30	42	30	34.0	45	30	1.10	1.11	1.49	1.3
29	29.046	29.995	29.022	29.354	19	33	30	20	37	34	30.3	38	15	0.92	1.86	1.21	1.16
30	29.311	29.247	29.254	29.281	20	33	24	20	38	28	29.3	40	21	0.85	1.24	0.81	0.97
31	29.109	29.080	29.206	29.135	19	28	13	21	32	23	22.3	33	13	0.52	1.08	0.67	0.89
Mean	29.495	29.471	29.472	29.479	.....	.....	.....	7.2	17.0	9.7	10.5	.....	.....	0.51	0.76	0.83	0.82
Feb.																	
1	29.373	29.276	29.269	29.293	4	20	6	5	22	7	11.3	23	4	0.41	0.85	0.46	0.67
2	29.374	29.348	29.426	29.383	-5	7	-4	-4	8	-3	0.3	10	-5	0.23	0.42	0.25	0.32
3	29.422	29.337	29.421	29.403	-11	12	-1	-10	13	0	1.0	14	-12	0.44	0.83	0.50	0.66
4	29.737	29.624	29.712	29.714	-19	-1	-14	-18	0	-13	-10.3	5	-21	0.06	0.38	0.1	0.16
5	29.406	29.651	29.815	29.634	-13	10	-4	-12	11	-3	-1.3	14	-17	0.12	0.57	0.3	0.3
6	29.845	29.446	29.373	29.589	-5	4	5	-4	5	6	2.3	10	-11	0.27	0.41	0.48	0.36
7	29.548	29.617	29.687	29.611	0	13	4	1	14	-3	4.0	14	-3	0.32	0.67	0.4	0.47
8	29.520	29.510	29.157	29.329	-9	13	17	-8	15	18	8.3	20	-15	0.17	0.36	0.43	0.52
9	29.651	29.640	28.790	28.694	29	40	28	30	46	29	3.5	47	18	1.49	1.62	1.42	1.52
10	29.260	29.329	.....	29.294	-1	18	.....	0	17	.....	8.5	.....	.....	0.30	0.78	.....	0.54
11	29.628	29.618	29.671	29.626	-1	17	11	0	18	12	10.0	32	-8	0.30	0.81	1.06	0.66
12	29.621	29.599	29.589	29.603	-1	17	16	0	18	17	11.7	30	-4	0.30	0.73	0.78	0.64
13	29.547	29.441	29.456	29.481	7	18	17	8	20	18	15.3	20	6	0.48	0.76	0.83	0.80
14	29.519	29.574	29.707	29.600	-11	7	-19	-10	-6	-16	-11.3	18	-18	0.14	0.30	0.7	0.16
15	29.821	29.761	29.695	29.759	.....	-3	-10	.....	-9	-17	-9.5	0	-31	.....	0.2	0	.....
16	29.167	29.023	29.161	29.137	-1	20	14	0	23	15	17.3	28	-20	0.00	0.50	0	.....
17	29.078	29.160	29.170	29.133	17	30	23	18	34	25	25.7	37	13	0.83	1.21	1	.....
18	28.561	28.947	29.078	28.995	23	28	14	25	30	15	21.3	38	14	1.00	1.30	0	.....
19	29.092	29.113	29.184	29.130	5	18	9	6	20	3	9.7	22	9	0.41	0.76	0	.....
20	29.417	29.402	29.397	29.405	-16	18	0	-15	18	1	1.3	20	-18	0.09	0.67	0	.....
21	29.050	28.770	29.080	28.960	5	35	28	8	40	31	25.7	42	0	0.47	1.39	1	.....
22	29.499	29.581	29.660	29.583	11	22	5	12	25	6	14.3	32	5	0.61	0.84	0	.....
23	29.559	29.306	29.156	29.340	-11	24	10	-10	25	11	8.7	25	-12	0.14	0.84	0	.....
24	29.172	29.392	29.674	29.413	9	7	-11	10	8	-10	2.7	10	-10	0.54	0.42	0	.....
25	29.787	29.758	29.788	29.778	-21	9	-4	-20	10	-3	-4.3	17	-27	0.04	0.51	0	.....
26	29.622	29.422	29.498	29.514	-6	30	23	-5	74	24	17.7	38	-10	0.31	1.21	1	.....
27	29.600	29.548	29.555	29.571	3	27	23	5	29	24	19.3	30	3	0.87	1.24	1.14	1.08
28	29.244	29.190	29.220	29.218	23	30	23	24	35	26	28.3	36	20	1.12	1.08	0.99	1.02
Mean	29.440	29.372	29.430	29.396	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.40	0.79	0.84	0.80

northern and northwestern lakes, at Superior City, Wisconsin.

VAPOR.				WIND.							Amount of cloudiness (0 = clear sky, 10 = sky entirely overcast)			U. S. inches and decimals.		Am't of rain or melted snow, in U. S. inches and decimals.
Humidity Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.		Resultant velocity in miles, per hour.	Resultant direction						
7 a. m.	9 a. m.	11 a. m.	Mean.	7 a. m.	9 a. m.	11 a. m.	7 a. m.	9 a. m.			11 a. m.	Resultant velocity in miles, per hour.	Resultant direction	7 a. m.	9 a. m.	
591	582	605	590	SW	W	SW	1.0	2.0	4.2	2.2	S. 57 W.	0	0	5		
784	685	623	674	W	SW	SW	1.6	3.6	4.2	2.9	S. 52 W.	6	0	0		
695	722	663	654	SW	SW	W	4.2	3.0	4.0	2.8	S. 55 W.	0	0	0		
366	718	539	741	W	SW	NW	.6	2.0	1.0	0.9	N. 75 W.	0	0	0		
539	777	542	651	NW	NW	NW	1.0	.6	2.0	1.2	N. 45 W.	8	9	10		
658	835	829	781	Calm	NE	NE	0.0	5.4	6.4	1.3	N. 45 E.	10	10	10		
582	829	769	727	E	NE	Calm	3.6	1.0	0.0	1.5	N. 80 E.	4	0	0		
539	483	702	573	SE	SW	SW	.6	2.0	1.0	1.0	S. 35 W.	0	0	10		
840	738	721	766	SW	W	Calm	1.0	.6	0.0	0.5	S. 62 W.	10	10	10		
864	685	843	811	W	Calm	Calm	.6	0.0	0.0	1.2	West.	10	10	10		
672	890	870	879	N	NE	NE	3.6	7.2	30.0	10.0	N. 41 E.	10	10	10		
695	740	784	761	W	W	W	0.0	4.2	1.0	1.7	West.	10	8	10		
804	850	829	828	NE	NE	N	3.6	2.0	6.4	3.1	N. 10 E.	10	10	10		
777	816	740	778	SW	SW	SW	3.0	4.2	1.0	2.7	S. 45 W.	6	8	10		
537	718	594	623	SW	Calm	Calm	1.0	0.0	2.0	0.3	S. 45 W.	6	0	10		
816	645	594	685	SW	Calm	Calm	.6	0.0	0.0	0.3	S. 45 W.	10	10	10		
658	730	577	655	NW	NW	NW	1.0	1.6	4.2	1.9	N. 55 W.	10	10	10		
335	557	423	438	SW	SW	SW	5.4	6.0	3.6	0.5	S. 45 W.	0	0	0		
989	718	645	544	SW	SW	SW	2.0	2.8	1.9	0.2	S. 45 W.	0	0	0		
335	784	156	425	SW	SW	Calm	1.0	1.6	0.0	0.6	S. 45 W.	0	0	0		
539	682	627	583	SW	NE	Calm	.6	1.0	0.0	0.2	N. 45 W.	6	0	3		
730	840	816	785	Calm	E.	Calm	0.0	1.0	0.0	0.3	East.	7	10	7		
810	835	850	838	SW	E	NE	1.0	.6	2.0	0.5	N. 62 E.	10	10	10		
834	781	804	800	Calm	NE	Calm	0.0	1.0	0.0	0.3	N. 45 E.	3	0	0		
883	893	895	879	Calm	SW	SW	0.0	3.6	4.0	2.6	S. 45 W.	10	10	10		
782	420	800	697	SW	W	Calm	2.0	1.0	0.0	0.9	S. 59 W.	10	6	7		
850	619	617	762	NE	SW	SW	1.6	3.0	5.4	0.2	S. 45 W.	8	10	6		
721	537	513	600	W	SW	SW	2.0	6.0	8.4	5.0	S. 51 W.	0	4	0		
850	584	816	753	SW	SW	Calm	3.6	15.4	0.0	6.0	S. 45 W.	0	0	0		
672	709	619	691							0.7	S. 68 W.	5.6	3.0	3.7		
730	721	769	747	W	W	NW	2.0	3.0	6.0	1.9	N. 83 W.	0	0	0		
645	777	659	693	SW	W	SW	3.0	4.8	1.0	2.7	S. 70 W.	10	0	0		
534	810	695	681	SW	SW	SW	1.6	1.0	3.6	2.0	S. 45 W.	0	3	10		
335	695	674	501	SW	W	SW	1.0	1.0	1.0	0.9	S. 60 W.	0	0	0		
498	737	658	631	SW	SW	SW	2.0	3.6	1.0	2.2	S. 45 W.	10	0	0		
645	750	760	718	E	NE	NE	1.8	4.2	.6	2.0	N. 56 E.	10	10	10		
707	816	730	728	W	W	Calm	1.0	.6	0.0	0.5	West.	2	0	3		.03
577	648	840	683	Calm	N.	NE	0.0	1.0	3	0.4	N. 10 E.	10	0	8		
690	543	687	773	SW	SW	SW	3.6	6.0	4.8	4.8	S. 45 W.	5	0	0		
695	834	714	714	W	NE		2.0	1.0	0.0	0.7	W. 62 W.	0	0	0		
695	840	840	780	NW	Calm	Calm	1.0	0.0	0.0	0.3	N. 45 W.	8	10	10		
695	840	834	790	W	NE	NE	1.0	.6	1.0	0.3	N. 5 E.	10	10	10		
777	702	840	773	NW	W	Calm	1.0	.6	0.0	0.5	N. 62 W.	3	4	10		
539	611	335	495	NW	NW	NW	4.2	3.6	5.4	4.4	N. 45 W.	10	4	0		
695	671	366	518	NW	NW	Calm	1.0	1.0	0.0	0.7	N. 45 W.	0	0	0		
840	617	746	754	SW	SW	SW	3.0	2.0	1.6	2.0	S. 45 W.	10	8	10		
746	782	843	784	SW	SW	SW	2.0	2.8	3.0	2.6	S. 45 W.	10	4	6		.13
760	702	730	731	SW	SW	Calm	1.0	.6	0.0	0.5	S. 45 W.	6	10	8		
423	682	707	604	SW	SW	SW	.6	1.0	.6	0.7	S. 45 W.	0	0	0		
760	557	685	667	Calm	SW	SW	0.0	3.6	1.0	1.5	S. 45 W.	10	0	3		
804	622	780	729	SW	SW	Calm	2.0	2.4	0.0	1.5	S. 45 W.	8	0	0		
439	622	797	653	SW	SW	SW	1.6	.6	2.0	1.2	S. 45 W.	0	6	3		
791	777	539	702	NW	NW	NW	2.0	5.4	6.0	4.5	N. 45 W.	4	2	4		
289	791	658	643	SW	SW	SW	2.4	2.0	1.0	1.6	S. 45 W.	0	0	0		
627	617	698	701	Calm	SW	SW	0.0	4.0	2.0	2.0	S. 45 W.	10	0	0		
300	775	688	714	SW	Calm	NE	.6	0.0	4.0	1.1	N. 45 E.	0	3	6		
868	537	634	680	NE	NE	Calm	1.6	1.0	0.0	0.9	N. 45 E.	8	0	0		
674	704	678	682							1.0	S. 75 W.	5.4	3.0	4.2		.18



Reduction of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1866.					°	°	°	°	°	°	°	°	°					
March	1	29.268	29.217	29.232	29.239	20	33	30	21	35	31	29.0	36	20	.096	.162	.155	.128
	2	29.905	29.037	29.310	29.084	32	25	14	33	26	15	24.7	35	13	.162	.123	.071	.121
	3	29.471	29.531	27.619	29.540	2	17	9	3	18	10	10.3	20	3	.036	.083	.054	.064
	4	29.733	29.731	29.731	29.748	2	23	13	3	25	14	14.0	29	0	.036	.100	.067	.092
	5	29.776	29.670	29.673	29.706	1	30	18	0	33	20	17.7	35	5	.030	.132	.076	.073
	6	29.732	29.705	29.768	29.735	14	28	20	15	31	22	22.7	37	10	.071	.119	.085	.092
	7	30.018	29.969	29.943	29.977	4	20	14	6	24	16	15.3	34	5	.030	.062	.059	.056
	8	29.930	29.762	20.663	29.787	11	25	21	12	27	22	20.3	30	10	.061	.112	.101	.091
	9	29.890	29.851	29.763	29.835	8	28	14	9	30	15	18.0	33	5	.051	.130	.071	.074
	10	29.518	29.271	29.149	29.313	1	23	19	0	24	20	14.7	26	5	.050	.112	.092	.092
	11	29.317	29.366	29.419	29.368	14	14	4	15	16	5	12.0	22	5	.071	.059	.041	.057
	12	29.426	29.461	29.574	29.507	8	18	2	7	20	3	05.3	23	10	.018	.076	.036	.043
	13	29.751	29.696	29.706	29.718	9	23	19	8	26	20	12.7	27	12	.017	.089	.092	.095
	14	29.695	29.595	29.593	29.628	4	23	11	5	26	12	14.3	30	0	.041	.089	.051	.064
	15	29.381	29.236	29.230	29.232	17	29	20	19	31	21	23.7	33	10	.071	.137	.096	.101
	16	29.290	29.323	29.493	29.369	0	13	2	1	15	1	05.7	22	1	.032	.056	.028	.037
	17	29.617	29.431	29.291	29.446	11	18	7	10	20	8	06.0	21	13	.014	.076	.048	.046
	18	29.232	29.256	29.325	29.271	8	24	9	10	25	10	15.3	27	3	.040	.117	.054	.073
	19	29.453	29.409	29.335	29.399	4	13	11	5	14	12	10.3	16	2	.041	.067	.061	.056
	20	29.292	29.259	29.271	29.274	14	14	11	15	15	12	14.0	16	10	.071	.071	.061	.064
	21	29.378	29.343	29.411	29.377	4	23	7	5	25	8	12.7	27	5	.041	.100	.048	.063
	22	29.468	29.325	29.333	29.375	1	19	17	0	20	18	12.7	21	10	.030	.092	.083	.086
	23	29.430	29.328	29.365	29.374	2	31	20	3	36	21	20.0	38	5	.036	.116	.096	.083
	24	29.483	29.403	29.458	29.448	6	18	9	7	20	10	12.3	25	5	.046	.076	.054	.059
	25	29.666	29.563	29.581	29.603	4	28	13	5	30	4	13.0	31	6	.041	.130		.096
	26	29.743	29.630	29.650	29.674	2	35	18	3	38	20	20.3	43	5	.036	.165	.076	.092
	27	29.710	29.618	29.595	29.641	4	28	24	5	30	25	20.0	33	3	.041	.130	.117	.096
	28	29.484	29.331	29.525	29.447	22	27	15	23	28	18	23.0	29	15	.108	.136	.052	.096
	29	29.524	29.391	29.313	29.409	14	40	22	16	45	23	28.0	47	12	.059	.182	.107	.116
	30	28.998	28.776	28.706	28.827	25	35	35	26	40	36	34.0	51	15	.123	.139	.191	.151
	31	28.717	29.017	29.217	28.984	35	37	32	36	38	33	35.7	40	31	.191	.207	.168	.189
Means....		29.497	29.436	29.459	29.464	....	....	....	08.9	26.8	16.3	17.3	....	....	.057	.105	.079	.083
April	1	29.387	29.372	29.370	29.376	33	33	29	34	34	30	32.7	36	30	.175	.175	.149	.166
	2	29.233	29.185	29.180	29.199	28	30	32	29	31	33	31.0	34	28	.142	.153	.162	.155
	3	29.098	29.057	29.073	29.076	32	33	32	33	34	33	33.3	35	30	.168	.175	.162	.170
	4	29.130	29.132	29.280	29.181	28	35	30	29	39	31	33.0	40	27	.142	.152	.155	.150
	5	29.280	29.294	29.427	29.334	24	30	24	25	32	25	27.3	33	23	.117	.144	.117	.126
	6	29.606	29.674	29.250	29.677	19	30	28	20	32	29	27.0	34	18	.092	.144	.142	.126
	7	29.716	29.594	29.577	29.636	18	33	28	20	35	29	28.0	39	12	.076	.162	.142	.127
	8	29.613	29.510	29.507	29.543	17	34	31	18	35	32	28.3	37	10	.083	.183	.162	.143
	9	29.430	29.304	29.251	29.328	31	35	34	32	37	35	34.7	38	30	.162	.178	.183	.174
	10	29.177	29.124	29.119	29.143	33	35	30	34	41	31	35.3	45	30	.175	.126	.155	.152
	11	29.005	28.797	28.792	28.865	32	33	34	33	35	35	34.3	37	28	.168	.162	.183	.173
	12	28.920	29.104	29.366	29.130	33	40	33	35	45	36	38.7	46	33	.162	.182	.149	.164
	13	29.490	29.336	29.220	29.349	28	33	33	31	35	34	33.3	40	21	.119	.162	.175	.152
	14	29.247	29.461	29.478	29.395	33	40	28	35	42	31	36.0	45	30	.162	.221	.119	.167
	15	29.420	29.316	29.289	29.342	30	36	32	32	37	33	34.0	40	20	.144	.199	.168	.170
	16	29.197	29.095	28.925	29.072	33	34	33	34	36	36	35.3	40	29	.175	.170	.149	.165
	17	29.050	29.298	29.221	29.190	37	47	38	38	49	40	42.3	50	34	.207	.297	.203	.236
	18	29.387	29.498	29.530	29.472	37	43	35	38	46	37	40.3	46	35	.207	.238	.178	.208
	19	29.550	29.420	29.290	29.420	33	32	32	34	33	33	33.3	40	30	.175	.168	.168	.170
	20	28.815	28.700	28.614	28.614	34	33	33	35	35	34	34.7	37	30	.183	.162	.175	.173
	21	28.730	28.902	28.992	28.875	38	45	38	40	52	40	44.0	52	32	.203	.207	.203	.204
	22	29.177	29.101	29.145	29.141	35	48	43	40	57	47	48.0	62	29	.139	.217	.225	.194
	23	29.172	29.214	29.302	29.229	34	45	35	36	50	40	42.0	52	26	.170	.234	.139	.181
	24	29.304	29.142	29.339	29.262	36	38	33	38	43	34	38.3	47	39	.186	.164	.175	.175
	25	29.352	29.343	29.345	29.347	35	45	35	40	53	37	43.3	55	32	.139	.194	.178	.170
	26	29.334	29.146	29.112	29.197	36	35	33	38	39	34	33.7	42	29	.186	.152	.175	.171
	27	28.977	28.827	28.867	28.890	35	38	39	37	43	40	40.0	46	33	.178	.164	.225	.184
	28	29.286	29.387	29.484	29.386	38	45	43	39	57	47	47.7	60	3				

the northern and northwestern lakes, at Superior City, Wisconsin.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decim.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity. In miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.							
.855	.797	.893	.848	Calm..	NE....	NE....	0.0	1.0	2.0	1.0	N. 45 E.	10	10	10		
.893	.876	.823	.864	NE....	SW....	SW....	6.0	4.2	10.0	2.7	S. 45 W.	10	10	6		1.21
.730	.840	.791	.787	SW....	SW....	SW....	4.2	6.0	4.0	4.7	S. 45 W.	4	0	10		
.730	.746	.816	.764	SW....	SW....	Calm..	2.0	1.0	0.0	1.0	S. 45 W.	0	0	0		
.695	.703	.702	.700	SW....	W.....	SW....	1.0	2.0	2.0	1.7	S. 65 W.	0	0	4		
.823	.685	.721	.743	SW....	NE....	W.....	1.0	1.0	3.6	1.2	West...	10	0	0		
.520	.483	.659	.554	W....	Calm..	Calm..	0.6	0.0	0.0	0.2	West...	0	0	0		
.804	.761	.860	.808	SW....	N.....	NW....	1.0	1.0	2.0	1.0	N. 55 W.	6	8	10		
.784	.782	.823	.800	W....	NE....	Calm..	1.0	1.0	....	0.3	N. 19 W.	0	0	0		.06
.695	.868	.850	.804	SW....	NW....	NE....	1.0	0.6	4.2	1.0	N. 31 E.	0	10	10		
.823	.659	.750	.744	NW....	NE....	Calm..	3.0	4.0	0.0	0.7	N. 46 W.	10	6	0		.30
.594	.702	.730	.675	SW....	NE....	Calm..	1.0	0.6	0.0	0.2	S. 45 W.	0	0	0		
.577	.634	.850	.687	Calm..	SW....	NE....	0.0	1.0	8.6	0.7	N. 45 E.	0	0	10		
.750	.634	.804	.729	SW....	NE....	Calm..	1.0	2.0	0.0	0.3	N. 45 E.	0	0	0		
.692	.788	.855	.778	Calm..	SSW...	NW....	0.0	2.4	3.0	0.3	S. 83 W.	10	6	10		
.707	.648	.683	.679	NW....	NW....	NW....	2.0	5.4	6.0	4.3	N. 45 W.	6	0	0		.08
.539	.702	.777	.673	NW....	SW....	SW....	1.0	2.0	15.4	5.7	S. 47 W.	0	0	10		
.582	.872	.791	.748	SW....	SW....	Calm..	1.0	3.6	0.0	1.7	S. 45 W.	0	0	10		
.750	.816	.804	.790	NE....	NE....	NE....	1.0	2.0	4.2	0.7	N. 45 W.	6	4	10		
.823	.823	.804	.817	NE....	NE....	NE....	8.4	15.4	1.6	8.3	N. 45 W.	10	10	0		
.750	.746	.777	.758	NW....	SW....	SW....	1.0	2.0	0.6	0.9	S. 66 W.	6	4	0		.30
.695	.850	.840	.795	SW....	NE....	NE....	0.6	4.0	1.0	1.7	N. 45 E.	3	10	10		
.730	.550	.855	.712	SW....	SW....	Calm..	1.0	0.6	0.0	0.7	S. 45 W.	0	0	6		.14
.769	.702	.791	.754	NW....	NW....	NW....	2.0	4.2	3.6	3.0	N. 45 W.	0	3	5		
.750	.782	.....	.766	NW....	NW....	NW....	1.0	2.0	0.6	1.3	N. 45 W.	0	0	3		
.730	.719	.702	.717	NW....	Calm..	Calm..	0.6	0.0	0.0	0.3	N. 45 W.	0	0	0		
.750	.782	.872	.801	NW....	NE....	NE....	0.6	1.0	6.4	2.3	N. 41 E.	8	5	10		
.864	.883	.525	.757	NE....	NE....	SW....	4.2	3.6	1.0	2.3	N. 45 E.	10	4	6		
.659	.607	.864	.710	SW....	SW....	Calm..	1.0	2.0	0.0	1.0	S. 45 W.	0	0	0		.05
.876	.557	.900	.778	Calm..	SW....	Calm..	0.0	2.0	0.0	0.7	S. 45 W.	10	0	10		
.900	.905	.893	.899	SW....	NW....	Calm..	1.0	1.0	0.0	0.5	West...	6	8	10		.09
.737	.739	.797	.756	.....	.....	.....	.....	.....	.....	4.5	N. 53 W.	3.9	3.2	5.2		2.23
.895	.895	.890	.893	E.....	E.....	Calm..	1.0	1.2	0.0	0.7	East....	10	10	10		
.887	.893	.893	.891	NE....	NE....	NE....	7.2	15.4	9.6	10.7	N. 45 E.	10	10	10		
.893	.895	.893	.894	NE....	NE....	NE....	20.0	8.4	2.0	10.3	N. 45 E.	10	10	10		
.887	.636	.893	.805	SW....	SW....	SW....	2.0	4.2	1.0	2.6	S. 45 W.	10	10	10		.22
.872	.794	.872	.846	NW....	NW....	NW....	1.0	3.0	1.0	1.7	N. 45 W.	10	10	10		
.850	.794	.887	.844	NW....	W.....	Calm..	0.6	1.0	0.0	0.7	N. 77 W.	10	8	10		
.702	.797	.887	.795	Calm..	NE....	Calm..	0.0	2.0	0.0	0.7	N. 45 E.	0	0	0		
.840	.898	.896	.878	Calm..	NE....	Calm..	0.0	1.0	0.0	0.3	N. 45 E.	0	0	10		
.896	.807	.898	.867	NE....	E.....	SW....	0.3	2.0	0.6	0.3	S. 71 E.	10	10	10		
.895	.488	.893	.759	W....	NW....	Calm..	0.6	1.0	0.0	0.7	N. 76 W.	10	10	6		.16
.893	.797	.898	.863	NE....	NE....	NE....	2.0	4.2	0.6	2.3	N. 45 E.	10	10	10		
.797	.607	.705	.703	NW....	SW....	Calm..	1.0	3.6	0.0	1.3	S. 64 W.	6	4	6		
.685	.797	.895	.792	NW....	NE....	NE....	0.6	4.2	5.4	3.3	N. 38 E.	7	10	10		
.797	.829	.685	.770	SW....	NW....	NW....	3.6	1.0	0.6	1.3	S. 69 W.	8	3	0		.30
.794	.903	.893	.863	NW....	W.....	Calm..	1.0	1.0	0.0	0.7	N. 71 W.	0	4	6		
.895	.802	.705	.801	NW....	N.....	NE....	0.6	1.0	1.0	0.7	N. 10 E.	8	9	10		
.905	.853	.820	.859	SE....	SW....	SW....	1.0	1.6	1.6	1.0	S. 11 W.	10	8	10		.78
.905	.767	.807	.826	NE....	NW....	NW....	2.0	1.6	2.0	1.3	N. 15 W.	10	8	6		.30
.895	.893	.893	.894	NE....	NE....	NE....	3.6	7.2	6.0	5.3	N. 45 E.	8	10	10		
.898	.797	.895	.863	NE....	NE....	NE....	1.0	1.0	0.6	0.7	N. 45 E.	10	10	10		.30
.820	.535	.820	.725	SW....	SW....	NE....	3.6	2.8	1.0	1.7	S. 45 W.	4	3	0		
.557	.465	.698	.573	SW....	SW....	Calm..	0.6	1.0	0.0	0.6	S. 45 W.	0	0	3		
.802	.646	.557	.668	NW....	NW....	NW....	1.0	2.0	1.0	1.3	N. 45 W.	0	6	0		
.811	.587	.895	.764	NW....	NW....	Calm..	0.9	1.0	0.0	0.7	N. 45 W.	0	8	10		
.557	.483	.807	.616	NW....	NW....	Calm..	1.0	0.6	0.0	0.6	N. 45 W.	6	3	2		.28
.811	.636	.895	.781	NW....	NE....	NE....	0.6	2.0	1.6	1.3	N. 43 E.	0	5	0		
.807	.587	.910	.768	NE....	NE....	NE....	1.0	2.0	3.0	2.0	N. 45 E.	6	0	10		
.907	.305	.698	.637	NW....	NW....	NW....	2.0	4.2	1.0	1.7	N. 45 W.	10	6	0		.22
.719	.820	.802	.780	NW....	NE....	NE....	1.0	2.0	2.0	1.3	N. 31 E.	0	8	9		
.895	.893	.890	.893	NE....	NE....	NE....	9.6	15.4	20.0	15.0	N. 45 E.	10	10	10		
.825	.730	.836	.797	.....	.....	.....	.....	.....	.....	1.6	N. 33 E.	6.3	6.5	6.9		2.78

Reductions of the monthly meteorological register of the survey

Date.		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
						Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
		7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.						°	°	°	°	°	°	°	°	°					
May		1	29.335	29.392	29.426	29.384	32	35	28	33	36	31	33.3	42	28	162	191	119	157
	2	29.478	29.391	29.413	29.427	31	45	35	33	55	37	41.7	55	20	151	162	177	166	
	3	29.414	29.337	29.315	29.355	42	45	38	45	56	43	48.0	62	32	222	155	164	162	
	4	29.453	29.247	29.326	29.342	42	43	38	45	47	42	44.7	60	39	222	225	177	211	
	5	29.430	29.408	29.428	29.412	43	41	38	46	43	42	43.7	51	26	258	231	177	215	
	6	29.624	29.526	29.528	29.599	42	42	38	45	43	39	42.3	45	29	228	254	216	239	
	7	29.519	29.375	29.371	29.422	37	43	39	38	45	40	41.0	49	35	207	251	222	244	
	8	29.233	29.048	29.044	29.108	47	55	48	50	70	55	58.3	73	37	283	234	241	257	
	9	29.231	29.146	29.159	29.179	43	43	38	48	47	41	45.3	56	35	212	225	190	209	
	10	29.072	28.922	28.971	28.988	48	47	54	49	50	60	53.0	67	30	322	283	329	311	
	11	29.070	29.012	28.932	29.005	40	40	37	41	41	38	40.0	60	35	235	235	257	239	
	12	29.169	29.245	29.373	29.262	43	49	43	44	57	47	49.3	62	37	264	242	235	244	
	13	29.511	29.468	29.484	29.488	43	45	35	44	48	37	43.0	50	35	264	260	177	211	
	14	29.407	29.201	29.077	29.228	35	41	37	36	43	38	39.0	45	25	191	231	207	210	
	15	29.377	29.182	29.256	29.272	37	37	38	38	38	39	38.3	41	35	207	207	216	210	
	16	29.477	29.338	29.224	29.366	35	40	36	38	42	37	39.0	46	24	165	221	199	185	
	17	29.005	28.770	28.910	28.895	36	63	56	37	75	60	57.3	77	36	199	415	266	377	
	18	29.179	29.104	29.662	29.115	45	43	38	47	46	40	44.3	60	37	293	238	203	228	
	19	28.817	28.751	28.896	28.821	39	47	54	40	49	55	48.0	70	36	225	297	404	319	
	20	29.141	29.193	29.317	29.217	47	50	43	50	59	50	53.0	61	46	283	242	186	237	
	21	29.461	29.451	29.485	29.466	40	52	40	42	62	41	48.3	63	33	221	256	235	237	
	22	29.591	29.453	29.428	29.491	41	48	41	42	50	44	45.3	55	55	214	309	218	257	
	23	29.588	29.515	29.463	29.522	48	44	40	50	47	43	46.7	50	34	309	249	208	257	
	24	29.391	29.196	29.202	29.263	38	62	49	40	80	51	57.0	83	30	203	316	321	280	
	25	29.275	29.183	29.116	29.191	45	52	43	49	55	44	49.3	55	42	247	228	264	246	
	26	29.029	29.069	29.105	29.068	42	40	41	44	42	42	42.7	45	40	241	221	244	235	
	27	29.207	29.248	29.228	29.248	40	42	42	42	44	43	43.0	46	39	221	241	254	228	
	28	29.229	29.205	29.220	29.238	46	49	44	48	54	47	49.7	55	36	224	222	249	272	
	29	29.182	29.080	29.010	29.091	53	59	55	55	72	64	63.7	75	40	376	327	314	338	
	30	29.262	29.245	29.297	29.248	41	44	40	42	46	42	43.3	66	40	244	262	221	242	
	31	29.414	29.343	39.311	29.356	42	45	42	43	48	43	41.7	50	32	254	260	254	236	
Means....		29.309	29.231	29.244	29.261	.....	.....	.....	43.4	41.3	44.3	46.3	.....	.....	239	250	233	241	
June		1	29.291	29.290	29.213	29.265	42	48	42	45	50	43	49.3	55	36	228	309	254	264
	2	29.296	29.148	29.141	29.195	44	56	48	46	61	50	52.3	66	35	262	383	309	316	
	3	29.101	28.993	28.993	29.029	52	60	55	54	65	57	58.7	69	42	362	451	407	407	
	4	28.993	29.003	29.001	28.999	54	43	47	56	55	48	53.0	62	47	391	251	310	317	
	5	28.996	28.896	29.844	29.245	46	49	46	48	50	47	48.3	50	42	224	335	297	305	
	6	28.862	29.931	29.068	29.287	46	60	54	47	61	55	51.3	63	43	297	505	404	402	
	7	29.186	29.126	29.069	29.127	49	52	46	50	53	47	50.0	59	45	335	375	297	302	
	8	28.814	29.685	28.697	29.065	46	46	50	47	47	51	48.3	51	43	297	297	348	314	
	9	28.989	29.151	29.329	29.156	45	55	50	47	61	53	53.7	63	42	273	354	321	316	
	10	29.653	29.583	29.521	29.586	43	45	41	45	46	42	44.3	55	40	251	226	244	267	
	11	29.306	29.286	29.241	29.278	40	40	40	41	41	41	41.0	43	88	235	235	235	235	
	12	29.117	29.106	29.073	29.119	42	42	43	43	43	44	43.3	47	40	254	254	264	257	
	13	28.979	28.853	28.948	28.927	48	58	54	50	60	55	55.0	65	40	309	456	404	390	
	14	28.989	29.055	29.138	29.061	51	58	55	52	63	57	57.3	65	45	361	429	407	398	
	15	29.143	29.171	29.209	29.174	54	55	52	55	58	53	55.3	64	50	404	393	375	391	
	16	29.305	29.251	29.332	29.296	52	60	46	54	62	47	54.3	67	45	362	491	297	363	
	17	29.440	29.422	29.312	29.391	45	50	45	48	52	47	49.0	58	40	260	334	273	288	
	18	29.449	29.232	29.181	29.287	48	58	53	50	67	58	58.3	71	32	309	361	336	336	
	19	29.188	29.062	29.130	29.127	58	65	61	62	82	70	71.3	84	49	429	390	416	412	
	20	29.050	29.007	29.052	29.036	60	74	63	62	86	73	73.7	89	58	491	677	442	537	
	21	29.148	29.100	29.112	29.120	60	63	56	65	80	65	70.0	82	57	451	349	330	377	
	22	29.125	29.082	29.088	29.098	64	67	58	67	79	60	68.7	84	55	556	501	456	504	
	23	29.103	29.049	29.056	29.069	50	49	49	52	51	50	51.0	60	45	334	321	335	330	
	24	29.043	29.105	29.124	29.091	60	72	63	65	83	64	70.7	88	46	451	636	562	530	
	25	29.336	29.302	29.198	29.279	60	65	64	70	88	70	76.0	92	56	385	309	516	407	
	26	29.226	29.122	29.228	29.212	62	64	56	67	77	61	68.3	77	58	489	556	283	476	
	27	29.455	29.438	29.527	29.473	55	59	51	58	69	55	60.7	69	50	393	367	221	369	
	28	29.592	29.551	29.481	29.541	57	70	55											

the north and northwestern lakes, at Superior City, Wisconsin.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.893	.900	.685	.826	NE....	NE....	Calm..	3.6	1.0	0	1.7	N. 45 E.	10	0	0		.30
.800	.388	.807	.665	N.....	NW....	NW....	0.6	1.8	1.0	1.0	N. 38 W.	0	3	4		
.762	.346	.587	.565	SW....	SW....	Calm..	2.0	8.0	0	3.3	S. 45 W.	0	4	5		
.762	.698	.661	.707	SW....	NE....	NE....	0.6	3.6	4.2	2.7	N. 45 E.	0	5	7		
.767	.833	.661	.754	N.....	NE....	Calm..	1.0	4.2	0	1.3	N. 38 E.	3	8	5		
.762	.916	.907	.862	NW....	NE....	NE....	1.0	2.0	0.6	0.7	N. 45 E.	0	0	9		
.905	.840	.910	.885	NE....	N.....	Calm..	0.6	1.0	0	0.7	N. 45 E.	8	9	10		
.786	.320	.561	.556	NW....	NW....	Calm..	1.0	5.4	0	2.0	N. 45 W.	0	5	6		
.631	.698	.738	.689	NW....	NE....	NE....	1.0	1.6	0.6	0.7	N. 34 E.	0	0	3		
.926	.786	.653	.788	Calm..	NE....	Calm..	0	1.2	0	0.3	N. 45 E.	8	6	10		
.912	.912	.905	.910	NE....	NE....	NE....	9.6	7.2	4.2	7.0	N. 45 E.	0	8	10		
.918	.521	.698	.712	NW....	NW....	NW....	6.0	8.4	3.6	6.7	N. 45 W.	7	4	6		
.918	.777	.807	.834	NE....	NE....	Calm..	1.0	1.2	0	0.7	N. 45 E.	5	3	0		
.900	.833	.905	.879	NW....	NE....	NE....	0.6	2.4	20.6	7.7	N. 43 E.	0	4	10		
.905	.905	.907	.906	NE....	NE....	NE....	8.0	10.0	8.4	8.7	N. 45 E.	10	10	0		.70
.719	.829	.903	.817	NE....	NE....	NE....	2.0	3.6	2.0	2.7	N. 45 E.	0	0	6		
.903	.479	.765	.716	NE....	SW....	SE....	1.0	6.0	3.0	2.0	S. 14 W.	10	5	0		
.847	.767	.820	.811	NE....	NE....	NE....	1.0	3.0	5.4	3.0	N. 45 E.	0	3	6		
.910	.853	.934	.899	NE....	NE....	SE....	3.0	2.0	2.0	1.7	N. 65 E.	0	8	10		
.786	.484	.515	.595	NW....	NW....	NW....	5.4	9.6	3.6	6.3	N. 45 W.	2	7	0		.25
.829	.461	.912	.734	NW....	NE....	NE....	2.0	1.0	2.0	1.3	N. 10 E.	0	0	0		
.914	.856	.756	.842	NE....	NE....	NE....	2.0	0.6	1.0	1.3	N. 45 E.	0	0	0		
.856	.772	.750	.793	NE....	NE....	NE....	0.6	1.0	0.3	0.7	N. 45 E.	0	0	0		
.820	.309	.859	.663	NE....	SW....	NW....	0.9	3.0	1.0	1.0	S. 75 W.	0	0	0		
.710	.762	.918	.797	N.....	NE....	NE....	1.0	1.0	1.2	1.0	N. 33 E.	0	0	0		
.836	.829	.914	.860	NE....	NE....	NE....	8.4	15.4	10.0	11.0	N. 45 E.	0	0	6		
.829	.836	.916	.860	NE....	NE....	NE....	10.0	8.4	1.0	6.3	N. 45 E.	8	3	6		
.850	.674	.772	.765	NE....	NE....	NE....	2.8	1.0	0.6	1.7	N. 45 E.	3	6	5		
.869	.417	.527	.604	NW....	NW....	NW....	1.0	5.4	2.0	2.7	N. 45 W.	0	3	7		
.914	.843	.829	.862	NE....	NE....	NE....	8.4	2.0	1.0	4.0	N. 45 E.	10	0	0		
.916	.777	.916	.870	NE....	NE....	NE....	1.0	2.0	5.6	2.3	N. 45 E.	0	0	3		
.841	.697	.787	.775	.....	.....	.....	.....	.....	.....	2.1	N. 27 E.	2.7	3.3	4.3	.....	1.23
.762	.856	.916	.855	Calm..	NE....	NE....	0	1.0	0.6	0.7	N. 45 E.	0	8	10		
.843	.713	.856	.804	Calm..	NE....	Calm..	0	1.0	0	0.3	N. 45 E.	0	3	5		
.867	.731	.874	.824	NE....	NE....	Calm..	0.6	0.9	0	0.7	N. 45 E.	0	7	5		
.872	.840	.923	.879	NE....	NE....	NE....	0.3	2.0	3.6	2.0	N. 45 E.	0	3	6		
.850	.927	.923	.900	NE....	NE....	NE....	3.0	5.4	4.0	4.0	N. 45 E.	0	8	10		
.923	.941	.934	.933	NE....	NE....	Calm..	0.3	1.0	0	0.3	N. 45 E.	10	8	10		.88
.927	.932	.923	.927	Calm..	NE....	NE....	0	2.0	3.6	1.7	N. 45 E.	10	10	10		
.923	.923	.929	.925	NW....	NE....	SW....	4.2	0.4	1.0	1.3	N. 45 E.	10	10	6		.50
.847	.659	.798	.768	NW....	NW....	NW....	20.0	24.0	2.0	15.3	N. 45 W.	5	3	0		.18
.840	.921	.914	.892	NE....	NE....	NE....	2.0	4.2	15.4	7.3	N. 45 E.	6	8	7		
.912	.912	.912	.912	NE....	NE....	NE....	8.4	10.0	7.2	8.3	N. 45 E.	10	10	10		.92
.916	.916	.918	.917	NE....	NE....	NE....	2.0	1.0	1.0	1.3	N. 45 E.	10	10	10		.02
.856	.880	.934	.890	NW....	SE....	NW....	1.0	2.0	3.6	0.7	N. 45 W.	3	10	7		
.930	.772	.874	.859	NW....	NW....	NW....	5.4	6.0	1.0	4.0	N. 45 W.	5	4	3		.26
.934	.816	.932	.894	NW....	NW....	NW....	2.0	2.4	1.2	1.7	N. 45 W.	8	3	5		.02
.867	.884	.923	.891	NW....	NW....	NW....	4.2	6.0	1.0	3.7	N. 45 W.	10	6	3		.06
.777	.861	.847	.828	NW....	NW....	N.....	1.0	2.0	0.6	1.0	N. 45 W.	2	3	5		
.856	.550	.698	.701	NW....	NW....	Calm..	1.0	2.0	0	1.0	N. 45 W.	0	0	2		
.772	.357	.570	.566	SW....	SW....	SW....	2.0	4.2	1.0	2.7	S. 45 W.	0	0	3		.12
.884	.545	.545	.658	NW....	NW....	NW....	2.0	5.4	0.6	2.7	N. 45 W.	3	5	4		
.731	.311	.535	.536	NW....	NW....	Calm..	1.0	6.6	0	2.7	N. 45 W.	4	5	7		
.841	.506	.880	.742	NW....	NW....	NE....	3.0	1.6	1.0	1.3	N. 38 W.	0	7	10		
.861	.859	.927	.882	NW....	NE....	NE....	4.2	4.8	8.4	5.7	N. 45 E.	0	0	8		
.731	.564	.943	.746	SW....	SW....	SW....	7.2	15.4	2.0	8.0	S. 45 W.	0	0	0		
.525	.233	.704	.487	SW....	SW....	NNW..	1.8	3.0	2.4	1.7	S. 77 W.	4	2	8		
.740	.841	.713	.765	NW....	NW....	NW....	3.0	15.6	2.0	7.0	N. 45 W.	7	5	3		
.816	.518	.743	.692	NW....	NW....	NW....	2.0	4.2	1.6	2.7	N. 45 W.	3	4	2		
.878	.768	.659	.768	NW....	NW....	Calm..	4.2	3.6	0	2.7	N. 45 W.	0	3	0		
.511	.448	.685	.548	NW....	NW....	NW....	1.0	1.2	0.6	0.7	N. 45 W.	0	3	2		
.831	.825	.933	.863	NW....	NE....	NE....	2.0	1.0	1.2	1.0	N. 11 E.	3	6	5		
.827	.728	.829	.795	.....	.....	.....	.....	.....	.....	5.3	N. 19 W.	3.8	5.1	5.5	.....	2.96



Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1866.					°	°	°	°	°	°	°	°	°					
July	1	29.121	29.141	29.176	29.146	42.0	46.0	47.0	49.0	54.0	54.5	52.5	64.0	46.0	175	206	224.92	
	2	29.211	29.148	29.112	29.157	51.0	55.0	54.0	64.0	69.5	71.5	68.3	72.0	44.0	202	241	303.24	
	3	29.115	29.193	29.296	29.201	58.5	53.0	48.0	69.0	64.0	56.5	63.2	78.5	54.0	351	257	223.27	
	4	29.444	29.451	29.470	29.455	43.0	44.5	42.0	54.0	53.5	51.0	52.8	61.5	48.0	133	173	149.12	
	5	29.479	29.424	29.326	29.410	44.0	48.5	49.0	54.0	58.0	56.0	56.0	64.0	45.0	157	216	255.20	
	6	29.161	29.107	29.255	29.174	57.0	65.0	57.0	64.0	73.5	66.0	67.8	83.0	54.0	373	504	346.42	
	7	29.375	29.418	29.301	29.365	55.0	57.0	50.0	65.0	70.5	60.0	65.2	71.5	57.0	300	286	229.27	
	8	29.348	29.448	29.478	29.425	54.0	55.0	47.5	63.5	71.0	57.5	64.0	74.0	51.5	292	221	197.27	
	9	29.556	29.558	29.512	29.542	47.0	49.5	45.0	59.5	61.0	51.5	57.3	69.5	48.0	158	202	214.18	
	10	29.466	29.383	29.298	29.382	50.0	53.5	46.0	60.0	71.0	59.5	63.5	72.5	45.0	229	179	133.10	
	11	29.228	29.218	29.130	29.192	55.0	57.0	57.0	70.0	75.0	64.5	69.8	81.5	51.5	234	226	366.25	
	12	29.306	29.464	29.499	29.423	41.0	40.0	38.0	50.0	50.0	48.0	49.3	51.5	44.0	139	117	109.12	
	13	29.584	29.564	29.522	29.557	42.0	43.5	45.0	52.0	58.5	53.0	54.5	60.	42.0	136	108	194.12	
	14	29.487	29.456	29.366	29.436	45.5	51.0	46.5	56.0	66.5	57.0	59.2	68.0	45.5	166	162	172.17	
	15	29.318	29.331	29.314	29.331	51.5	48.5	43.0	62.0	63.0	51.5	58.8	70.5	46.0	242	150	166.18	
	16	29.354	29.381	29.354	29.363	48.0	51.5	45.0	60.0	67.0	53.0	60.0	69.0	41.0	177	175	194.12	
	17	29.321	29.245	29.166	29.244	49.5	54.5	49.5	67.0	72.0	67.5	68.8	81.5	47.5	123	209	116.12	
	18	29.047	28.990	28.920	28.986	55.0	56.5	56.0	73.5	82.0	73.5	76.3	85.5	63.5	148	119	217.16	
	19	28.862	28.970	29.078	28.970	51.5	50.5	45.5	63.5	60.0	53.5	59.0	65.0	50.0	223	241	199.22	
	20	29.191	29.296	29.370	29.286	44.5	47.0	42.0	54.5	58.5	50.5	54.5	60.5	47.0	162	171	156.16	
	21	29.187	29.524	29.547	29.419	44.5	45.5	40.0	52.0	58.0	47.5	52.7	62.0	43.5	188	140	149.12	
	22	29.583	29.595	29.556	29.578	46.5	48.5	47.5	56.5	62.0	54.5	57.7	66.5	42.5	184	163	237.18	
	23	29.541	29.478	29.384	29.468	50.0	54.5	48.5	61.0	71.0	58.0	63.3	72.0	45.0	216	207	216.21	
	24	29.374	29.308	29.231	29.304	56.0	54.0	47.0	62.0	68.5	56.5	62.3	70.5	53.0	369	226	193.24	
	25	29.093	29.082	29.122	29.099	45.0	55.0	54.0	54.5	72.5	69.5	65.5	74.0	50.0	175	201	212.12	
	26	29.201	29.206	29.146	29.184	57.0	60.5	51.0	70.0	79.5	69.5	73.0	81.0	56.0	293	274	130.22	
	27	29.092	29.042	29.112	29.082	60.0	65.0	53.0	70.5	81.0	61.0	70.8	80.5	57.5	378	403	229.36	
	28	29.044	29.173	29.354	29.190	52.0	56.0	43.0	65.0	68.5	52.0	61.8	73.5	49.0	216	283	160.29	
	29	29.508	29.521	29.509	29.513	42.0	51.0	41.0	...	65.0	49.5	57.2	68.0	38.0	...	189	146.12	
	30	29.546	29.455	29.426	29.476	48.5	58.0	50.0	60.0	82.0	63.0	68.3	81.5	44.5	216	163	129.12	
	31	29.418	29.409	29.405	29.411	57.0	66.0	57.5	68.0	77.0	67.0	70.7	91.5	57.5	319	492	347.36	
Means....		29.308	29.322	29.315	29.315	.....	.....	.....	61.0	67.2	58.2	62.1	.....	.....	219	222	208.216	
August	1	29.435	29.359	29.342	29.379	61.5	62.0	57.0	74.0	81.5	74.0	76.5	89.0	61.5	379	295	240.36	
	2	29.285	29.229	29.200	29.236	61.5	69.5	64.5	71.5	89.0	77.5	79.3	89.0	68.0	412	458	432.44	
	3	29.435	29.505	29.528	29.489	51.5	57.5	48.5	64.0	72.5	59.0	65.2	72.5	51.0	216	274	303.21	
	4	29.535	29.488	29.501	29.508	51.0	56.5	50.5	63.0	72.0	60.0	65.0	74.0	48.0	216	258	241.22	
	5	29.521	29.456	29.368	29.448	52.5	58.5	53.0	61.5	72.0	62.0	65.2	74.0	56.0	276	311	224.20	
	6	29.229	29.228	29.226	29.228	48.5	53.5	50.0	55.5	62.5	58.0	58.7	64.0	52.5	249	291	255.26	
	7	29.178	29.160	29.135	29.158	54.0	60.5	56.5	64.5	73.5	68.0	68.7	75.5	54.5	279	354	304.32	
	8	29.241	29.241	29.241	29.241	56.0	61.5	55.0	65.5	75.0	65.0	68.5	78.0	54.5	323	364	300.32	
	9	29.127	28.964	29.037	29.043	59.0	68.5	63.0	67.5	78.5	72.0	72.7	82.0	61.5	387	562	455.42	
	10	29.198	29.356	29.416	29.323	53.0	49.0	45.5	62.0	60.5	54.5	59.0	62.0	51.0	284	196	186.22	
	11	29.511	29.496	29.414	29.474	44.5	52.5	39.5	53.5	64.5	47.5	55.2	67.0	44.0	176	236	138.13	
	12	29.394	29.294	29.293	29.327	47.5	70.5	62.5	59.0	87.0	73.0	73.0	87.5	40.0	177	523	426.35	
	13	29.338	29.320	29.296	29.318	60.5	66.0	58.0	69.0	83.0	67.0	73.0	85.5	63.0	414	411	363.26	
	14	29.302	29.270	29.257	29.276	58.0	62.0	57.0	72.0	80.0	67.5	73.2	87.5	61.0	296	275	326.22	
	15	29.421	29.478	29.458	29.452	49.0	47.0	41.0	60.0	62.0	49.5	57.2	62.5	46.5	203	125	146.12	
	16	29.499	29.485	29.441	29.475	38.5	60.5	46.0	47.0	77.0	55.5	59.8	78.0	41.0	122	307	186.26	
	17	29.401	29.319	29.265	29.329	48.5	60.0	53.0	61.0	86.5	70.0	72.5	86.5	52.0	176	165	178.17	
	18	29.302	29.386	29.401	29.363	59.5	54.5	45.5	70.5	66.0	54.0	63.5	70.5	51.5	363	272	123.26	
	19	29.348	29.267	29.273	29.296	47.0	59.5	55.0	59.0	75.5	66.0	66.2	79.5	50.0	165	309	227.24	
	20	29.142	29.168	29.166	29.159	55.5	59.0	49.0	63.5	70.0	57.0	63.5	72.0	55.0	335			

\* Mean of 30 observations.

† Changed from 93 to 94, 93 being less than the dry bulb of 2 p. m.

the northern and northwestern lakes, at Marquette, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0=clear sky.) (10=sky entirely overcast.)			Am't of evaporation, in U. S. inches and deci- mals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.	7 a. m.	
.505	.493	.527	.508	Calm	NW	W	0	4	4	2.3	N. 69 W.	10	10	7	Evaporation for month, 3.650.	1.36
.340	.335	.393	.356	N	E	S	2	4	4	1.5	S. 63 E	0	0	10		
.496	.432	.488	.472	Calm	SE	W	0	4	2	1.0	S. 16 E	3	4	4		
.320	.428	.399	.382	NW	NW	NW	12	4	2	6.0	N. 45 W.	4	5	4		
.376	.448	.569	.464	E	Calm	SE	4	0	4	2.3	S. 69 E					.42
.625	.610	.543	.593	S	NW	NW	12	25	12	10.0	N. 62 W.					1.12
.487	.384	.442	.438	NW	E	W	4	4	2	1.0	N. 16 W.		0	1		
.498	.292	.416	.402	E	NE	NW	2	4	4	2.0	N. 19 E	0	0	0		
.312	.378	.562	.417	NE	E	Calm	2	2	0	1.3	N. 69 E	2	10	10		
.442	.235	.263	.313	Calm	E	NW	0	2	2	0.5	N. 22 E	2	1	0		
.320	.261	.603	.395	Calm	SE	Calm	0	4	0	1.3	S. 45 E	0	0	4		.36
.386	.322	.292	.333	N	NW	NW	35	25	4	19.7	N. 20 W.	10	10	0		
.350	.173	.483	.335	NW	NW	NW	12	4	4	6.7	N. 45 W.	4	0	2		
.373	.261	.384	.339	S	SE	Calm	4	4	0	2.3	S. 21 E	3	6	2		
.437	.260	.436	.378	S	NE	NW	2	4	2	0.9	N. 33 E	4	4	0		
.342	.267	.483	.364	NW	E	N	2	2	2	1.2	N. 10 E	0	1	0		
.186	.257	.173	.205	SW	E	W	12	2	2	4.0	S. 45 W.	5	2	0		
.161	.108	.263	.177	SW	W	SW	12	35	12	18.3	S. 72 W.	1	7	4		
.380	.467	.488	.445	NW	NW	NW	25	12	2	13.0	N. 45 W.	8	8	1		
.382	.350	.424	.386	N	NE	NW	12	2	2	4.9	North	2	4	0		
.477	.293	.454	.408	NW	N	NW	12	4	2	5.7	N. 36 W.	4	4	0		
.405	.294	.556	.418	NE	NE	Calm	2	2	0	1.3	N. 45 E	0	6	0		
.402	.272	.448	.374	E	SE	Calm	2	4	0	1.9	S. 60 E	2	4	3		
.665	.324	.433	.474	Calm	E	NW	0	2	2	0.5	N. 22 E	4	6	5		
.411	.252	.295	.319	NW	NW	NW	25	25	4	18.0	N. 45 W.	9	4	0		
.400	.272	.180	.284	Calm	E	NW	0	4	2	1.0	N. 61 E	0	0	0		
.507	.282	.553	.447	S	S	NW	4	12	2	5.0	S. 5 W.	10	4	0		
.351	.407	.411	.390	SW	SW	NW	12	25	4	12.7	S. 52 W.	0	8	8		
	.307	.412	.360	W	E	N	2	12	4	3.7	N. 69 E	10	0	0		
.448	.149	.329	.309	SE	S	S	2	35	25	20.3	S. 1 E	0	0	0		
.467	.531	.526	.508	SW	SE	NW	45	12	2	15.0	S. 32 W.	0	6	0		
.408	.327	.427	.387							2.4	N. 81 W.	3.5	3.9	2.2		3.26
.453	.275	.286	.338	SW	S	S	12	45	12	22.0	S. 7 W.	4	7	5	Evaporation for month, 4.705.	
.536	.336	.460	.444	S	S	SW	35	35	35	32.7	S. 15 W.	4	4	4		.04
.362	.344	.407	.371	W	NE	N	4	2	2	1.4	N. 37 W.	3	2	2		
.375	.335	.467	.392	W	E	Calm	2	12	0	3.3	East	0	0	4		
.506	.397	.511	.471	Calm	E	Calm	0	2	0	0.7	East	4	5	8		.03
.565	.515	.529	.536	Calm	N	Calm	0	4	0	1.3	North	10	8	0		.88
.460	.429	.445	.445	SW	SE	N	2	2	2	0.3	South	0	1	0		
.514	.422	.487	.474	E	E	E	2	2	2	2.0	East	0	1	0		
.575	.577	.582	.578	S	S	Calm	25	45	0	23.3	South	4	8	0		.16
.511	.372	.439	.441	NW	NW	N	35	25	4	21.0	N. 42 W.	9	0	0		
.428	.390	.419	.412	NE	NE	NW	2	2	2	1.5	N. 19 E	0	0	0		
.355	.408	.525	.429	SW	S	SW	25	12	12	15.3	S. 34 W.	0	0	0		
.584	.365	.550	.500	Calm	NE	Calm	0	2	0	0.7	N. 45 E	0	1	0		
.378	.244	.485	.369	SW	N	Calm	2	4	0	1.0	N. 29 W.	0	0	1		
.392	.224	.412	.343	NW	NW	N	12	35	2	16.3	N. 44 W.	1	0	0		
.378	.331	.422	.377	Calm		Calm	0		0	0.0	Calm	0	0	0		
.329	.130	.243	.234	SW	SW	S	12	25	4	13.3	S. 41 W.	0	1	5		
.486	.427	.463	.459	NW	N	NW	2	35	2	12.7	N. 4 W.	1	0	0		
.330	.362	.450	.381	Calm	N	SE	0	2	2	0.5	N. 68 E	1	8	1		
.572	.482	.521	.525	NW	N	NW	2	2	2	1.9	N. 31 W.	9	1	0		
.483	.392	.447	.441	Calm	NE	NW	0	12	4	4.3	N. 25 E	8	5	0		
.436	.328	.536	.433	N	NE	NW	12	12	2	6.0	N. 4 W.	7	1	0		
.369	.365	.430	.388	N	NE	N	4	12	2	5.7	N. 30 E	1	0	0		
.416	.210	.402	.343	W	SW	Calm	4	2	0	1.9	S. 75 W.	1	1	0		
.457	.830	.605	.631	SW	SW	SW	35	35	35	35.0	S. 45 W.	0	2	0		
.528	.348	.346	.407	W	NE	NW	25	12	4	7.3	N. 60 W.	5	0	0		
.424	.365	.426	.405	Calm	NE	Calm	0	12	0	4.0	N. 45 E	9	7	3		
.445	.457	.287	.396	Calm	NE	NW	0	4	2	1.5	N. 19 E	0	8	0		
.544	.373	.658	.525	E	S	S	2	25	12	12.7	S. 3 E	8	4	0		
.668	.590	.648	.635	S	SW	S	12	45	45	31.3	S. 20 W.	4	0	0		
.353	.362	.668	.461	SW	N	SE	4	4	2	0.5	S. 82 W.	4	2	2		
.458	.387	.470	.438							4.2	S. 41 W.	3.1	2.5	1.1		1.11

‡ Mean of 28 observations.

§ Mean of 29 observations.



Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
					7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.					°	°	°	°	°	°	°	°	°					
May	1	29.335	29.392	29.426	29.384	32	35	28	33	36	31	33.3	42	28	162	191	112	155
	2	29.478	29.391	29.413	29.427	31	45	35	33	55	37	41.7	55	20	151	162	172	161
	3	29.414	29.337	29.315	29.355	42	45	38	45	56	43	48.0	62	32	222	155	164	181
	4	29.453	29.247	29.326	29.342	42	43	38	45	47	42	44.7	60	30	222	225	177	210
	5	29.430	29.408	29.488	29.442	43	41	28	46	43	42	43.7	51	26	228	231	177	215
	6	29.624	29.526	29.588	29.599	42	42	38	45	43	39	42.3	45	29	228	254	216	233
	7	29.519	29.375	29.371	29.422	37	43	39	38	45	40	41.0	49	35	207	251	225	224
	8	29.233	29.648	29.044	29.108	47	55	48	50	70	55	58.3	73	37	283	234	243	253
	9	29.231	29.146	29.159	29.179	43	43	38	48	47	41	45.3	56	35	212	225	190	209
	10	29.072	28.922	28.971	28.968	48	47	54	49	50	60	53.0	67	30	322	283	324	314
	11	29.070	29.012	28.932	29.205	40	40	37	41	41	38	40.0	60	35	235	235	207	225
	12	29.169	29.245	29.373	29.262	43	49	43	44	57	47	49.3	62	37	264	242	225	244
	13	29.511	29.468	29.481	29.488	43	45	35	44	48	37	43.0	50	35	264	260	172	231
	14	29.407	29.201	29.077	29.228	35	41	37	36	43	38	39.0	45	25	191	231	207	210
	15	29.377	29.182	29.256	29.272	37	37	38	38	38	39	38.3	41	35	207	207	216	210
	16	29.477	29.398	29.224	29.366	35	40	36	38	42	37	39.0	46	24	165	221	199	195
	17	29.005	28.770	28.910	28.895	36	63	56	37	75	60	57.3	77	36	199	415	396	377
	18	29.179	29.104	29.662	29.115	45	43	38	47	46	40	44.3	60	37	293	238	213	232
	19	28.817	28.751	28.896	28.821	39	47	54	40	49	55	48.0	70	36	225	297	404	342
	20	29.141	29.193	29.317	29.217	47	50	43	50	59	50	53.0	61	46	283	242	186	257
	21	29.461	29.451	29.485	29.466	40	52	40	42	62	41	48.3	63	33	221	256	235	237
	22	29.591	29.453	29.428	29.491	41	48	41	42	50	44	45.3	55	55	214	309	218	257
	23	29.588	29.515	29.463	29.522	48	44	40	50	47	43	46.7	50	34	309	249	204	253
	24	29.391	29.196	29.202	29.263	38	62	49	40	80	51	57.0	83	30	203	316	321	290
	25	29.275	29.183	29.116	29.191	45	52	43	49	55	44	49.3	55	42	247	228	264	246
	26	29.029	29.069	29.105	29.068	42	40	41	44	42	42	42.7	45	40	241	221	244	235
	27	29.207	29.248	29.288	29.248	40	42	42	42	44	43	43.0	46	39	221	241	254	239
	28	29.289	29.205	29.220	29.238	46	49	44	48	54	47	49.7	55	36	284	222	249	272
	29	29.182	29.080	29.010	29.091	53	59	55	55	72	64	63.7	75	40	376	327	314	339
	30	29.262	29.245	29.297	29.248	41	44	40	42	46	42	43.3	66	40	244	282	221	242
	31	29.414	29.343	39.311	29.356	42	45	42	43	48	43	41.7	50	32	254	260	254	256
Means....		29.309	29.231	29.244	29.261	....	....	....	43.4	41.3	44.3	46.3	....	....	239	250	273	241
June	1	29.291	29.290	29.213	29.265	42	48	42	45	50	43	49.3	55	36	228	309	254	264
	2	29.296	29.148	29.141	29.195	44	56	48	46	61	50	52.3	66	35	262	383	309	318
	3	29.101	28.993	28.993	29.029	52	60	55	54	65	57	58.7	69	42	362	451	407	407
	4	28.993	29.003	29.001	28.999	54	43	47	56	55	48	53.0	62	47	391	251	310	317
	5	28.996	28.896	29.844	29.245	46	49	46	48	50	47	48.3	50	42	284	335	297	305
	6	28.862	29.931	29.068	29.287	46	60	54	47	61	55	51.3	63	43	297	505	404	402
	7	29.186	29.126	29.069	29.127	49	52	46	50	53	47	50.0	59	45	335	375	297	302
	8	28.814	29.685	28.697	29.065	46	46	50	47	47	51	48.3	51	43	297	297	348	314
	9	28.989	29.151	29.329	29.156	45	55	50	47	61	53	53.7	63	42	273	354	321	316
	10	29.653	29.583	29.521	29.586	43	45	41	45	46	42	44.3	55	40	251	286	244	260
	11	29.306	29.286	29.241	29.278	40	40	40	41	41	41	41.0	43	88	235	235	235	235
	12	29.117	29.106	29.073	29.119	42	42	43	43	43	44	43.3	47	40	254	254	264	257
	13	28.979	28.853	28.948	28.927	48	58	54	50	60	55	55.0	65	40	379	456	404	390
	14	28.989	29.055	29.138	29.061	51	58	55	52	63	57	57.3	65	45	361	429	407	398
	15	29.143	29.171	29.209	29.174	54	55	52	55	58	53	55.3	64	50	404	393	375	391
	16	29.305	29.251	29.332	29.296	52	60	46	54	62	47	54.3	67	45	362	491	297	383
	17	29.440	29.422	29.312	29.391	45	50	45	48	52	47	49.0	58	40	260	334	273	288
	18	29.449	29.232	29.181	29.287	48	58	53	50	67	58	58.3	71	32	309	363	336	336
	19	29.188	29.062	29.130	29.127	58	65	61	62	82	70	71.3	84	49	429	390	416	412
	20	29.050	29.007	29.052	29.036	60	74	63	62	86	73	73.7	89	58	491	677	442	537
	21	29.148	29.100	29.112	29.120	60	63	56	65	80	65	70.0	82	57	451	349	330	377
	22	29.125	29.082	29.088	29.098	64	67	58	67	79	60	68.7	84	55	556	501	456	504
	23	29.103	29.049	29.056	29.069	50	49	49	52	51	50	51.0	60	45	334	321	335	330
	24	29.043	29.105	29.124	29.091	60	72	63	65	83	64	70.7	88	46	451	636	562	550
	25	29.336	29.302	29.198	29.279	60	65	64	70	88	70	76.0	92	56	385	309	516	403
	26	29.226	29.122	29.288	29.212	62	64	56	67	77	61	68.3	77	58	489	556	359	476
	27	29.455	29.438	29.527	29.473	55	59	51	58	69	55	60.7	69	50	393	367	321	360
	28	29.592	29.551	29.481	29.541	57	70	55	59	75	61	65.0	77	40	439	666	354	486
	29	29.497	29.355	29.333	29.398	58	67	60	68	81	66	71.7	85	48	350	474	438	421
	30	29.244	29.201	29.232	29.226	60	58	53	63	61	54	59.3	75	52	478	443	389	457
Means....		29.199	29.218	29.192	29.205	....	....	....	54.5	63.6	54.8	57.6	....	....	357	406	357	373

north and northwestern lakes, at Superior City, Wisconsin.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely over-cast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
93	.900	.685	.826	NE....	NE....	Calm..	3.6	1.0	0	1.7	N. 45 E.	10	0	0		.30
00	.388	.807	.665	N.....	NW....	NW....	0.6	1.8	1.0	1.0	N. 38 W.	0	3	4		
62	.346	.587	.565	SW....	SW....	Calm..	2.0	8.0	0	3.3	S. 45 W.	0	4	5		
62	.608	.661	.707	SW....	NE....	NE....	0.6	3.6	4.2	2.7	N. 45 E.	0	5	7		
67	.833	.661	.754	N.....	NE....	Calm..	1.0	4.2	0	1.3	N. 38 E.	3	8	5		
62	.916	.907	.862	NW....	NE....	NE....	1.0	2.0	0.6	0.7	N. 45 E.	0	0	9		
05	.840	.910	.885	NE....	N.....	Calm..	0.6	1.0	0	0.7	N. 45 E.	8	9	10		
86	.320	.561	.556	NW....	NW....	Calm..	1.0	5.4	0	2.0	N. 45 W.	0	5	6		
31	.698	.738	.629	NW....	NE....	NE....	1.0	1.6	0.6	0.7	N. 34 E.	0	0	3		
26	.786	.653	.788	Calm..	NE....	Calm..	0	1.2	0	0.3	N. 45 E.	8	6	10		
12	.912	.905	.910	NE....	NE....	NE....	9.6	7.2	4.2	7.0	N. 45 E.	0	8	10		
18	.521	.698	.712	NW....	NW....	NW....	6.0	8.4	3.6	6.7	N. 45 W.	7	4	6		
18	.777	.807	.834	NE....	NE....	Calm..	1.0	1.2	0	0.7	N. 45 E.	5	3	0		
00	.833	.905	.879	NW....	NE....	NE....	0.6	2.4	20.6	7.7	N. 43 E.	0	4	10		
05	.905	.907	.906	NE....	NE....	NE....	8.0	10.0	8.4	8.7	N. 45 E.	10	10	0		.70
19	.829	.903	.817	NE....	NE....	NE....	2.0	3.6	2.0	2.7	N. 45 E.	0	0	6		
03	.479	.765	.716	NE....	SW....	SE....	1.0	6.0	3.0	2.0	S. 14 W.	10	5	0		
47	.767	.820	.811	NE....	NE....	NE....	1.0	3.0	5.4	3.0	N. 45 E.	0	3	6		
10	.833	.934	.899	NE....	NE....	SE....	3.0	2.0	2.0	1.7	N. 65 E.	0	8	10		
86	.484	.515	.595	NW....	NW....	NW....	5.4	9.6	3.6	6.3	N. 45 W.	2	7	0		.25
29	.461	.912	.734	NW....	NE....	NE....	2.0	1.0	2.0	1.3	N. 10 E.	0	0	0		
14	.856	.756	.842	NE....	NE....	NE....	2.0	0.6	1.0	1.3	N. 45 E.	0	0	0		
56	.772	.750	.793	NE....	NE....	NE....	0.6	1.0	0.3	0.7	N. 45 E.	0	0	0		
20	.309	.859	.663	NE....	SW....	NW....	0.9	3.0	1.0	1.0	S. 75 W.	0	0	0		
10	.762	.918	.797	N.....	NE....	NE....	1.0	1.0	1.2	1.0	N. 33 E.	0	0	0		
36	.829	.914	.860	NE....	NE....	NE....	8.4	15.4	10.0	11.0	N. 45 E.	0	0	6		
29	.836	.916	.860	NE....	NE....	NE....	10.0	8.4	1.0	6.3	N. 45 E.	8	3	6		
50	.674	.772	.765	NE....	NE....	NE....	2.8	1.0	0.6	1.7	N. 45 E.	3	6	5		
69	.417	.527	.604	NW....	NW....	NW....	1.0	5.4	2.0	2.7	N. 45 W.	0	3	7		
14	.843	.829	.862	NE....	NE....	NE....	8.4	2.0	1.0	4.0	N. 45 E.	10	0	0		
16	.777	.916	.870	NE....	NE....	NE....	1.0	2.0	5.6	2.3	N. 45 E.	0	0	3		
41	.697	.787	.775	.....	.....	.....	.....	.....	.....	2.1	N. 27 E.	2.7	3.3	4.3		1.23
62	.856	.916	.855	Calm..	NE....	NE....	0	1.0	0.6	0.7	N. 45 E.	0	8	10		
43	.713	.856	.804	Calm..	NE....	Calm..	0	1.0	0	0.3	N. 45 E.	0	3	5		
67	.731	.874	.824	NE....	NE....	Calm..	0.6	0.9	0	0.7	N. 45 E.	0	7	5		
72	.840	.923	.879	NE....	NE....	NE....	0.3	2.0	3.6	2.0	N. 45 E.	0	3	6		
50	.927	.923	.900	NE....	NE....	NE....	3.0	5.4	4.0	4.0	N. 45 E.	0	8	10		
23	.941	.934	.933	NE....	NE....	Calm..	0.3	1.0	0	0.3	N. 45 E.	10	8	10		.88
87	.932	.923	.927	Calm..	NE....	NE....	0	2.0	3.6	1.7	N. 45 E.	10	10	10		
23	.923	.929	.925	NW....	NE....	SW....	4.2	0.4	1.0	1.3	N. 45 E.	10	10	6		.50
47	.659	.798	.768	NW....	NW....	NW....	20.0	24.0	2.0	15.3	N. 45 W.	5	3	0		.18
40	.921	.914	.892	NE....	NE....	NE....	2.0	4.2	15.4	7.3	N. 45 E.	6	8	7		
12	.912	.912	.912	NE....	NE....	NE....	8.4	10.0	7.2	8.3	N. 45 E.	10	10	10		.92
16	.916	.918	.917	NE....	NE....	NE....	2.0	1.0	1.0	1.3	N. 45 E.	10	10	10		.02
56	.880	.934	.890	NW....	SE....	NW....	1.0	2.0	3.6	0.7	N. 45 W.	3	10	7		
30	.772	.874	.859	NW....	NW....	NW....	5.4	6.0	1.0	4.0	N. 45 W.	5	4	3		.26
34	.816	.932	.894	NW....	NW....	NW....	2.0	2.4	1.2	1.7	N. 45 W.	8	3	5		.02
67	.884	.923	.891	NW....	NW....	NW....	4.2	6.0	1.0	3.7	N. 45 W.	10	6	3		.06
77	.861	.847	.828	NW....	NW....	N.....	1.0	2.0	0.6	1.0	N. 45 W.	2	3	5		
56	.550	.698	.701	NW....	NW....	Calm..	1.0	2.0	0	1.0	N. 45 W.	0	0	2		
72	.357	.570	.566	SW....	SW....	SW....	2.0	4.2	1.0	2.7	S. 45 W.	0	0	3		.12
84	.545	.545	.658	NW....	NW....	NW....	2.0	5.4	0.6	2.7	N. 45 W.	3	5	4		
31	.341	.535	.536	NW....	NW....	Calm..	1.0	6.6	0	2.7	N. 45 W.	4	5	7		
41	.506	.880	.742	NW....	NW....	NE....	3.0	1.6	1.0	1.3	N. 38 W.	0	7	10		
61	.850	.927	.882	NW....	NE....	NE....	4.2	4.8	8.4	5.7	N. 45 E.	0	0	8		
31	.564	.943	.746	SW....	SW....	SW....	7.2	15.4	2.0	8.0	S. 45 W.	0	0	0		
25	.233	.704	.487	SW....	SW....	NNW...	1.8	3.0	2.4	1.7	S. 77 W.	4	2	8		
40	.841	.713	.765	NW....	NW....	NW....	3.0	15.6	2.0	7.0	N. 45 W.	7	5	3		
16	.518	.743	.692	NW....	NW....	NW....	2.0	4.2	1.6	2.7	N. 45 W.	3	4	2		
78	.768	.659	.768	NW....	NW....	Calm..	4.2	3.6	0	2.7	N. 45 W.	0	3	0		
11	.448	.685	.548	NW....	NW....	NW....	1.0	1.2	0.6	0.7	N. 45 W.	0	3	2		
31	.825	.933	.863	NW....	NE....	NE....	2.0	1.0	1.2	1.0	N. 11 E.	3	6	5		
27	.728	.829	.795	.....	.....	.....	.....	.....	.....	5.3	N. 19 W.	3.8	5.1	5.5		2.96

*Reductions of the monthly meteorological register of the survey of*

Date.		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.												VAPOR.			
						Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.						
		7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.		
1866.						°	°	°	°	°	°	°	°	°	°						
July	1	29.121	29.141	29.176	29.146	42.0	46.0	47.0	49.0	54.0	54.5	52.5	64.0	46.0	175	206	221	222			
	2	29.211	29.148	29.112	29.157	51.0	55.0	58.0	64.0	69.5	71.5	68.3	72.0	44.0	202	241	243	244			
	3	29.115	29.193	29.296	29.201	58.5	53.0	48.0	69.0	64.0	56.5	63.2	78.5	54.0	351	257	223	271			
	4	29.444	29.451	29.470	29.455	43.0	44.5	42.0	54.0	53.5	51.0	52.8	61.5	48.0	133	175	149	152			
	5	29.479	29.424	29.326	29.410	44.0	48.5	49.0	54.0	58.0	56.0	56.0	64.0	45.0	157	216	255	282			
	6	29.161	29.107	29.255	29.174	57.0	65.0	57.0	64.0	73.5	66.0	67.8	83.0	54.0	373	504	346	422			
	7	29.375	29.418	29.301	29.365	55.0	57.0	50.0	65.0	70.5	60.0	65.2	71.5	57.0	300	286	299	271			
	8	29.348	29.448	29.478	29.425	54.0	55.0	47.5	63.5	71.0	57.5	64.0	74.0	51.5	292	221	157	237			
	9	29.556	29.558	29.512	29.542	47.0	49.5	45.0	59.5	61.0	51.5	57.3	69.5	48.0	158	202	214	197			
	10	29.466	29.383	29.298	29.382	50.0	53.5	46.0	60.0	71.0	59.5	63.5	72.5	45.0	229	179	133	182			
	11	29.228	29.218	29.130	29.192	55.0	57.0	57.0	70.0	75.0	64.5	69.8	81.5	51.5	234	226	326	273			
	12	29.306	29.464	29.499	29.423	41.0	40.0	38.0	50.0	50.0	48.0	49.3	51.5	44.0	139	117	99	112			
	13	29.584	29.564	29.522	29.557	42.0	43.5	45.0	52.0	58.5	53.0	54.5	60.4	42.0	136	106	194	137			
	14	29.487	29.456	29.366	29.436	45.5	51.0	46.5	56.0	66.5	57.0	59.8	68.0	45.5	166	169	178	171			
	15	29.318	29.331	29.344	29.331	51.5	48.5	43.0	62.0	63.0	51.5	58.8	70.5	46.0	242	150	166	187			
	16	29.354	29.381	29.354	29.363	48.0	51.5	45.0	60.0	67.0	53.0	60.0	69.0	41.0	177	175	194	182			
	17	29.321	29.245	29.166	29.244	49.5	54.5	49.5	67.0	72.0	67.5	68.8	81.5	47.5	123	204	116	142			
	18	29.047	28.990	28.920	28.986	55.0	56.5	56.0	73.5	82.0	73.5	76.3	85.5	63.5	148	119	217	161			
	19	28.862	28.970	29.078	28.970	51.5	50.5	45.5	63.5	60.0	53.5	59.0	65.0	50.0	223	241	199	221			
	20	29.191	29.296	29.370	29.286	44.5	47.0	42.0	54.5	58.5	50.5	54.5	60.5	47.0	162	171	156	163			
	21	29.187	29.524	29.547	29.419	44.5	45.5	40.0	52.5	58.0	47.5	52.7	62.0	43.5	188	140	149	138			
	22	29.583	29.595	29.556	29.578	46.5	48.5	47.5	56.5	62.0	54.5	57.7	66.5	42.5	184	163	237	195			
	23	29.541	29.478	29.384	29.468	50.0	54.5	48.5	61.0	71.0	58.0	63.3	72.0	45.0	216	207	216	213			
	24	29.374	29.308	29.231	29.304	56.0	54.0	47.0	62.0	68.5	56.5	62.3	70.5	53.0	369	226	192	264			
	25	29.093	29.082	29.122	29.099	45.0	55.0	54.0	54.5	72.5	69.5	65.5	74.0	50.0	175	201	212	196			
	26	29.201	29.206	29.146	29.184	57.0	60.5	51.0	70.0	79.5	69.5	73.0	81.0	56.0	293	274	130	232			
	27	29.092	29.042	29.112	29.082	60.0	65.0	53.0	70.5	81.0	61.0	70.8	80.5	57.5	378	403	229	360			
	28	29.044	29.173	29.354	29.190	52.0	56.0	43.0	65.0	68.5	52.0	61.8	73.5	49.0	216	283	160	230			
	29	29.508	29.521	29.509	29.513	42.0	51.0	41.0	65.0	49.5	57.2	68.0	68.0	38.0	....	129	146	162			
	30	29.546	29.455	29.426	29.476	48.5	58.0	50.0	60.0	82.0	63.0	68.3	81.5	44.5	216	163	189	128			
	31	29.418	29.409	29.405	29.411	57.0	66.0	57.5	68.0	77.0	67.0	70.7	91.5	57.5	319	492	347	326			
Means....		29.308	29.322	29.315	29.315	....	....	....	61.0	67.2	58.2	62.1	....	....	219	222	208	216			
August	1	29.435	29.359	29.342	29.379	61.5	62.0	57.0	74.0	81.5	74.0	76.5	89.0	61.5	379	295	240	305			
	2	29.285	29.229	29.200	29.238	61.5	69.5	64.5	71.5	89.0	77.5	79.3	89.0	68.0	412	458	432	434			
	3	29.435	29.505	29.528	29.489	51.5	57.5	48.5	64.0	72.5	59.0	65.2	72.5	51.0	216	274	203	231			
	4	29.535	29.488	29.501	29.508	51.0	56.5	50.5	63.0	72.0	60.0	65.0	74.0	48.0	216	258	241	234			
	5	29.521	29.456	29.368	29.448	52.5	58.5	53.0	61.5	72.0	62.0	65.2	74.0	56.0	276	311	224	290			
	6	29.229	29.228	29.226	29.228	48.5	53.5	50.0	55.5	62.5	58.0	58.7	64.0	52.5	249	291	255	265			
	7	29.178	29.160	29.135	29.158	54.0	60.5	56.5	64.5	73.5	68.0	68.7	75.5	54.5	279	354	304	312			
	8	29.241	29.241	29.241	29.241	56.0	61.5	55.0	65.5	75.0	65.0	68.5	78.0	54.5	323	364	300	329			
	9	29.127	28.964	29.037	29.043	59.0	68.5	63.0	67.5	78.5	72.0	72.7	82.0	61.5	387	562	455	468			
	10	29.198	29.356	29.416	29.323	53.0	49.0	45.5	62.0	60.5	54.5	59.0	62.0	51.0	284	196	186	222			
	11	29.511	29.496	29.414	29.474	44.5	52.5	39.5	53.5	64.5	47.5	55.2	67.0	44.0	176	236	138	183			
	12	29.394	29.294	29.293	29.327	47.5	70.5	62.5	59.0	87.0	73.0	73.0	87.5	40.0	177	523	426	375			
	13	29.338	29.320	29.296	29.318	60.5	66.0	58.0	69.0	83.0	67.0	73.0	85.5	63.0	414	411	363	386			
	14	29.302	29.270	29.257	29.276	58.0	62.0	57.0	72.0	80.0	67.5	73.2	87.5	61.0	296	275	326	299			
	15	29.421	29.478	29.458	29.452	49.0	47.0	41.0	60.0	62.0	49.5	57.2	62.5	46.5							

the northern and northwestern lakes, at Marquette, Michigan.

VAPOR.				WIND.										Amount of cloudiness. (0=clear sky.) (10=sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.							
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.		
05	.493	.527	.508	Calm	NW	W	0	4	4	2.3	N. 69 W.	10	10	7	Evaporation for month, 3.650.	1.36		
40	.335	.393	.356	N	E	S	2	4	4	1.5	S. 63 E	0	0	10				
96	.432	.488	.472	Calm	SE	W	0	4	2	1.0	S. 16 E	3	4	4				
20	.428	.399	.382	NW	NW	NW	12	4	2	6.0	N. 45 W.	4	5	4				
76	.448	.569	.464	E	Calm	SE	4	0	4	2.3	S. 69 E					.42		
25	.610	.543	.593	S	NW	NW	12	25	12	10.0	N. 62 W.					1.12		
87	.384	.442	.438	NW	E	W	4	4	2	1.0	N. 16 W.		0	1				
98	.292	.416	.402	E	NE	NW	2	4	4	2.0	N. 19 E	0	0	0				
12	.378	.562	.417	NE	E	Calm	2	2	0	1.3	N. 69 E	2	10	10				
42	.235	.263	.313	Calm	E	NW	0	2	2	0.5	N. 22 E	2	1	0				
20	.261	.603	.395	Calm	SE	Calm	0	4	0	1.3	S. 45 E	0	0	4		.36		
86	.322	.292	.333	N	NW	NW	35	25	4	19.7	N. 20 W.	10	10	0				
50	.173	.483	.335	NW	NW	NW	12	4	4	6.7	N. 45 W.	4	0	2				
73	.261	.384	.339	S	SE	Calm	4	4	0	2.3	S. 21 E	3	6	2				
37	.260	.436	.378	S	NE	NW	2	4	2	0.9	N. 33 E	4	4	0				
42	.267	.483	.364	NW	E	N	2	2	2	1.2	N. 10 E	0	1	0				
86	.257	.173	.205	SW	E	W	12	2	2	4.0	S. 45 W.	5	2	0				
61	.108	.263	.177	SW	W	SW	12	35	12	18.3	S. 72 W.	1	7	4				
80	.467	.488	.445	NW	NW	NW	25	12	2	13.0	N. 45 W.	8	8	1				
82	.350	.424	.386	N	NE	NW	12	2	2	4.9	North	2	4	0				
77	.293	.454	.408	NW	N	NW	12	4	2	5.7	N. 36 W.	4	4	0				
05	.294	.556	.418	NE	NE	Calm	2	2	0	1.3	N. 45 E	0	6	0				
02	.272	.448	.374	E	SE	Calm	2	4	0	1.9	S. 60 E	2	4	3				
65	.324	.433	.474	Calm	E	NW	0	2	2	0.5	N. 22 E	4	6	5				
11	.252	.295	.319	NW	NW	NW	25	25	4	18.0	N. 45 W.	9	4	0				
00	.272	.180	.284	Calm	E	NW	0	4	2	1.0	N. 61 E	0	0	0				
07	.282	.553	.447	S	S	NW	4	12	2	5.0	S. 5 W.	10	4	0				
51	.407	.411	.390	SW	SW	NW	12	25	4	12.7	S. 52 W.	0	8	8				
....	.307	.412	.360	W	E	N	2	12	4	3.7	N. 69 E	10	0	0				
48	.149	.329	.309	SE	S	S	2	35	25	20.3	S. 1 E	0	0	0				
67	.531	.526	.508	SW	SE	NW	45	12	2	15.0	S. 32 W.	0	6	0				
08	.327	.427	.387	.....	.....	.....	.....	.....	.....	2.4	N. 81 W.	3.5	3.9	2.2	.....	3.26		
53	.275	.286	.338	SW	S	S	12	45	12	22.0	S. 7 W.	4	7	5	Evaporation for month, 4.705.			
36	.336	.460	.444	S	S	SW	35	35	35	32.7	S. 15 W.	4	4	4		.04		
62	.344	.407	.371	W	NE	N	4	2	2	1.4	N. 37 W.	3	2	2				
75	.335	.467	.392	W	E	Calm	2	12	0	3.3	East	0	0	4				
06	.397	.511	.471	Calm	E	Calm	0	2	0	0.7	East	4	5	8		.03		
65	.515	.529	.536	Calm	N	Calm	0	4	0	1.3	North	10	8	0		.88		
60	.429	.445	.445	SW	SE	N	2	2	2	0.3	South	0	1	0				
14	.422	.487	.474	E	E	E	2	2	2	2.0	East	0	1	0				
75	.577	.582	.578	S	S	Calm	25	45	0	23.3	South	4	8	0		.16		
11	.372	.439	.441	NW	NW	N	35	25	4	21.0	N. 42 W.	9	0	0				
28	.390	.419	.412	NE	NE	NW	2	2	2	1.5	N. 19 E	0	0	0				
55	.408	.525	.429	SW	S	SW	25	12	12	15.3	S. 34 W.	0	0	0				
84	.365	.550	.500	Calm	NE	Calm	0	2	0	0.7	N. 45 E	0	1	0				
78	.244	.485	.369	SW	N	Calm	2	4	0	1.0	N. 29 W.	0	0	1				
92	.224	.412	.343	NW	NW	N	12	35	2	16.3	N. 44 W.	1	0	0				
78	.331	.422	.377	Calm		Calm	0		0	0.0	Calm	0	0	0				
29	.130	.243	.234	SW	SW	S	12	25	4	13.3	S. 41 W.	0	1	5				
86	.427	.463	.459	NW	N	NW	2	35	2	12.7	N. 4 W.	1	0	0				
30	.362	.450	.381	Calm	N	SE	0	2	2	0.5	N. 68 E	1	8	1				
72	.482	.521	.525	NW	N	NW	2	2	2	1.9	N. 31 W.	9	1	0				
83	.392	.447	.441	Calm	NE	NW	0	12	4	4.3	N. 25 E	8	5	0				
36	.328	.536	.433	N	NE	NW	12	12	2	6.0	N. 4 W.	7	1	0				
69	.365	.430	.388	N	NE	N	4	12	2	5.7	N. 30 E	1	0	0				
16	.210	.402	.343	W	SW	Calm	4	2	0	1.9	S. 75 W.	1	1	0				
57	.830	.605	.631	SW	SW	SW	35	35	35	35.0	S. 45 W.	0	2	0				
28	.348	.346	.407	W	NE	NW	25	12	4	7.3	N. 60 W.	5	0	0				
24	.365	.426	.405	Calm	NE	Calm	0	12	0	4.0	N. 45 E	9	7	3				
45	.457	.287	.396	Calm	NE	NW	0	4	2	1.5	N. 19 E	0	8	0				
44	.373	.658	.525	E	S	S	2	25	12	12.7	S. 3 E	8	4	0				
68	.590	.648	.635	S	SW	S	12	45	45	31.3	S. 20 W.	4	0	0				
53	.362	.668	.461	SW	N	SE	4	4	2	0.5	S. 82 W.	4	2	2				
58	.387	.470	.438	.....	.....	.....	.....	.....	.....	4.2	S. 41 W.	3.1	2.5	1.1	.....	1.11		

‡ Mean of 28 observations.

§ Mean of 29 observations.



Reductions of the monthly meteorological register of the survey of

Date.		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
						Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
						7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.						°	°	°	°	°	°	°	°	°					
Sept.	1	29.340	29.280	29.238	29.286	57.5	72.0	60.5	61.0	83.0	63.5	70.5	87.0	55.5		427.	609.	469.	499.
	2	29.175	29.134	29.145	29.151	66.5	77.5	67.0	70.0	90.5	70.5	77.0	92.0	64.0		603.	767.	615.	662.
	3	29.173	29.114	29.072	29.120	69.0	75.0	72.0	72.0	83.0	76.0	77.0	86.0	67.0		668.	760.	731.	722.
	4	29.120	29.161	29.188	29.156	68.5	67.5	63.0	71.5	75.5	69.0	72.0	78.5	58.0		656.	566.	435.	571.
	5	29.223	29.117	29.125	29.155	55.5	64.5	59.5	61.5	83.0	67.5	70.7	86.0	55.5		362.	359.	402.	374.
	6	29.097	29.155	29.178	29.143	60.0	65.5	66.0	68.5	79.0	68.5	72.0	82.5	68.0		405.	447.	606.	486.
	7	29.244	29.215	29.188	29.216	52.0	67.0	66.5	55.5	76.0	64.0	65.0	72.5	41.5		319.	542.	480.	457.
	8	29.176	29.198	29.259	29.211	59.0	57.5	56.0	61.0	58.5	57.5	59.0	62.0	55.5		473.	460.	429.	451.
	9	29.304	29.291	29.256	29.284	56.0	60.0	59.5	57.0	62.5	61.0	60.2	67.0	54.0		436.	485.	482.	470.
	10	29.075	28.910	29.012	28.999	65.0	72.0	58.5	66.0	73.0	62.0	67.0	76.0	60.0		604.	771.	444.	606.
	11	29.023	29.072	29.183	29.094	53.5	64.0	57.5	57.0	83.0	66.0	68.7	...	51.5		363.	342.	361.	355.
	12	29.276	29.197	29.175	29.216	56.0	63.0	69.0	61.0	74.0	72.5	69.2	72.5	56.0		383.	429.	661.	491.
	13	29.313	29.388	29.341	29.354	67.0	67.0	61.0	70.0	72.0	63.0	68.3	77.0	63.0		622.	595.	510.	576.
	14	29.386	29.488	29.516	29.463	57.0	66.0	52.5	57.0	67.0	51.5	59.5	70.0	54.0		466.	626.	369.	487.
	15	29.593	29.535	29.463	29.530	55.0	64.0	59.0	59.0	72.0	64.5	65.2	76.5	73.0		380.	439.	442.	437.
	16	29.316	29.656	29.151	29.375	60.0	75.0	72.5	62.0	86.5	78.0	75.5	88.5	54.0		491.	712.	723.	642.
	17	29.468	29.554	29.606	29.543	49.0	50.0	56.5	51.0	54.0	59.0	54.7	59.0	48.0		321.	302.	424.	351.
	18	29.642	29.578	29.466	29.562	41.5	58.5	50.5	42.5	65.5	54.5	54.2	69.0	40.0		249.	397.	314.	320.
	19	29.415	29.331	29.330	29.375	53.0	67.5	61.0	57.0	85.5	70.5	71.0	86.5	52.0		350.	432.	410.	397.
	20	29.278	29.214	29.255	29.249	57.0	70.0	63.0	63.5	87.0	62.0	72.8	88.0	61.5		379.	504.	529.	464.
	21	29.301	29.305	29.358	29.321	62.0	68.0	63.5	64.0	78.5	67.0	69.8	81.0	63.0		529.	544.	539.	537.
	22	29.391	29.397	29.385	29.391	61.0	71.0	65.0	62.5	81.5	67.5	70.5	83.0	61.0		517.	617.	524.	573.
	23	29.361	29.324	29.255	29.313	64.5	72.5	68.5	66.5	80.0	70.5	72.3	83.0	65.0		579.	696.	670.	649.
	24	29.168	29.175	29.281	29.208	64.0	63.0	55.0	68.0	77.0	59.5	68.2	80.0	59.0		543.	329.	320.	437.
	25	29.462	29.509	29.504	29.492	53.5	56.0	49.5	55.0	62.0	51.5	56.2	62.5	51.0		390.	369.	327.	362.
	26	29.502	29.452	29.425	29.460	51.0	65.5	61.0	52.0	78.5	62.0	64.2	80.0	44.0		361.	453.	523.	446.
	27	29.476	29.460	29.423	29.453	60.0	69.0	61.0	61.5	76.0	68.0	68.5	79.0	58.5		498.	614.	443.	518.
	28	29.361	29.337	29.235	29.311	62.5	69.0	67.5	64.5	75.0	71.0	70.2	77.5	63.0		539.	628.	626.	598.
	29	29.050	29.188	29.224	29.154	63.5	57.0	49.5	66.5	67.0	52.5	62.0	69.0	51.5		546.	333.	314.	392.
	30	29.162	29.151	29.131	29.148	45.5	50.5	43.5	47.0	56.5	46.0	49.8	59.0	44.0		285.	228.	250.	274.
Means....		29.296	29.298	29.279	29.291	.....	.....	.....	61.0	74.8	64.2	66.7	.....	.....		459.	512.	424.	487.
Oct.	1	29.133	29.179	29.217	29.176	41.0	44.0	41.0	44.5	50.0	43.5	46.0	54.5	41.0		211.	209.	221.	215.
	2	29.277	29.341	29.357	29.325	40.0	43.5	39.5	40.5	45.5	43.0	43.0	50.0	38.5		241.	256.	197.	231.
	3	29.391	29.484	29.422	29.432	40.0	44.5	39.5	43.5	50.0	43.0	45.5	52.0	38.0		202.	221.	197.	207.
	4	29.454	29.477	29.467	29.466	35.5	49.5	37.5	36.5	51.0	38.0	41.8	54.5	34.5		195.	334.	218.	249.
	5	29.470	29.461	29.467	29.466	38.5	57.0	43.0	39.0	63.0	43.5	48.5	67.5	37.0		227.	386.	245.	286.
	6	29.377	29.258	29.163	29.266	47.5	61.0	63.0	50.0	69.0	68.0	62.3	70.0	42.5		296.	430.	509.	412.
	7	29.284	29.414	29.427	29.375	51.5	40.0	42.5	51.5	41.5	42.5	45.2	52.0	41.5		380.	228.	272.	293.
	8	29.395	29.244	29.136	29.258	43.5	56.0	50.5	44.0	65.0	53.5	54.2	67.0	40.5		276.	330.	327.	311.
	9	29.068	29.087	29.156	29.104	56.5	65.0	54.0	58.5	75.5	55.5	63.2	84.0	52.0		430.	477.	398.	425.
	10	29.264	29.321	29.346	29.310	52.0	54.5	53.5	52.5	56.0	53.5	54.0	58.5	50.0		382.	405.	410.	399.
	11	29.239	29.331	29.446	29.339	54.5	49.5	43.5	55.5	49.5	44.5	49.8	60.0	43.5		411.	354.	269.	345.
	12	29.525	29.551	29.543	29.540	42.0	46.0	36.0	43.0	48.5	36.0	42.5	52.5	36.0		254.	284.	212.	250.
	13	29.432	29.326	29.206	29.321	34.0	51.0	44.0	34.0	57.0	45.0	45.3	61.5	32.0		196.	295.	275.	255.
	14	29.103	29.118	29.265	29.162	45.5	48.0	38.5	46.5	48.5	42.5	45.8	52.0	41.5		291.	329.	181.	297.
	15	29.407	29.422	29.398	29.409	36.5	37.5	35.0	38.5	41.0	36.5	37.7	48.0	35.5		190.	179.	124.	184.
	16	29.388	29.328	29.297	29.338	32.0	52.0	42.0	32.5	58.0	44.0	44.8	60.5	31.0		175.	309.	241.	242.
	17	29.192	29.104	29.134	29.143	43.0	45.5	46.0	44.0	45.5	46.0	45.2	49.0	43.0		264.	304.	311.	293.
	18	29.126	29.098	28.951	29.058	46.0	45.0	40.0	46.5	46.0	40.0	44.2	49.0	39.0		304.	326.	248.	279.
	19	28.621	28.673	28.901	28.732	39.5	44.0	40.0	41.5	52.0	43.0	45.5	55.5	39.0		216.	183.	206.	202.
	20	28.912	29.028	29.164	29.035	37.5	37.0	31.5	38.5	40.0	37.0	38.5	48.5	35.0		211.	181.	147.	180.
	21	20.306	29.414	29.422	39.381	31.5	39.0	35.0	34.5	46.0	38.0	39.5	51.0	33.0		143.	147.	165.	159.
	22	29.392	29.336	29.385	29.371	36.5	41.5	34.0	41.0	48.5	37.0	42.2	50.0	33.0		157.	171.	157.	162.
	23	29.601	29.671	29.707	29.660	31.5	33.5	35.6	33.5	40.0	38.0	37.2	42.0	33.0		155.	107.	175.	146.
	24	29.736	29.745	29.664	29.716	35.5	40.0	34.0	38.0	45.0	36.5	39.8	49.0	35.5		175.	182.	163.	173.
	25	29.569	29.564	29.567	29.567	35.5	38.5	35.0	37.0	40.0	37.0	38.0	45.0	33.5		188.	214.	172.	193.
	26	29.594	29.636	29.634	29.621	31.5	33.0	29.0	34.0	38.0	32.0	34.7	41.0	31.0		143.	165.	126.	145.
	27	29.610	29.527	29.403	29.513	27.5	31.5	32.5	29.5	36.0	34.0	33.2	38.5	28.5		127.	125.	165.	139.
	28	29.312	29.311	29.345	29.323	32.0	33.5	28.0	32.0	38.0	29.0	33.0	41.0	27.0		181.	133.	136.	150.
	29	29.382	29.427	29.506	29.438	26.0	36.5	28.5	31.0	44.0	29.0	31.7	46.0	27.5		083.	112.	151.	117.
	30	29.506	29.418	29.319	29.424	28.5	44.0	33.0	29.0	54.0	36.0	39.7	56.0	25.5		151.	157.	149.	132.
	31	29.268	29.344	29.388	29.333	29.5	44.5	32.0	32.0	54.5	34.0	40.2	56.0	30.5		135.	162.	155.	151.
Means....		29.333	29.313	29.349	29.342	.....	.....	.....	40.4	49.5	41.3	43.7	.....	.....		225.	247.	226.	233.

the northern and northwestern lakes, at Marquette, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
851	.794	.860	.835	E.....	SE.....	Calm..	4	35	0	12.7	S. 49 E.	1	10	10	.....	.25
000	.906	1.000	.969	NW....	W.....	Calm..	2	4	0	1.8	N. 75 W.	10	10	1	.....	.....
896	.963	.762	.874	S.....	S.....	S.....	45	45	2	30.7	South..	1	1	6	.....	.....
898	.892	.944	.911	NW....	NW....	NW....	4	25	25	18.0	N. 45 W.	9	8	8	.....	.05
893	.669	.893	.818	NW....	SW....	S.....	12	12	2	6.0	S. 83 W.	1	7	10	.....	.....
893	.760	.834	.829	NW....	N.....	NW....	45	35	25	32.7	N. 30 W.	10	6	9	.....	.....
939	.802	.645	.785	S.....	S.....	S.....	25	12	25	20.7	South..	5	8	10	.....	.....
744	.528	.856	.709	SW....	NW....	N.....	12	45	12	18.3	N. 50 W.	0	5	10	.....	.....
848	.843	.893	.861	N.....	NW....	Calm..	12	4	0	5.0	N. 9 W.	9	9	10	.....	.....
000	.522	.760	.761	Calm..	SE.....	SE.....	0	12	25	12.3	S. 45 E.	8	0	10	.....	.....
898	.577	.856	.777	S.....	S.....	SW....	4	4	35	13.7	S. 37 W.	1	4	0	.....	.....
628	.515	.622	.588	SW....	SW....	W.....	35	12	35	25.3	S. 64 W.	3	1	0	.....	.....
840	.386	.133	.420	Calm..	S.....	S.....	0	25	25	16.7	South..	0	0	0	.....	.....
809	.580	.709	.699	S.....	SW....	S.....	2	12	12	8.0	S. 20 W.	0	2	0	.....	.....
761	.678	.829	.756	S.....	Calm..	S.....	12	0	25	12.3	South..	4	4	0	.....	.....
925	.830	.864	.873	SE.....	S.....	S.....	12	12	25	15.3	S. 10 E.	8	8	8	.....	.....
900	.773	.797	.823	NW....	NW....	W.....	25	4	4	10.7	N. 50 W.	10	8	2	.....	.....
843	.507	.750	.700	W.....	E.....	S.....	2	2	4	1.3	South..	8	0	0	.....	.....
948	.710	.762	.807	S.....	S.....	S.....	2	45	25	24.0	South..	8	9	10	.....	.....
768	.792	.811	.790	S.....	Calm..	Calm..	4	0	0	1.3	South..	0	5	10	.....	.....
947	.869	.771	.862	Calm..	.....	W.....	0	.....	4	2.0	West....	4	.....	10	.....	.14
855	.822	.782	.820	NW....	NW....	NW....	4	4	12	6.7	N. 45 W.	8	9	10	.....	.....
909	.743	.900	.851	NW....	Calm..	S.....	4	0	2	3.2	S. 17 W.	9	0	0	.....	.....
949	.587	.782	.773	SE.....	S.....	Calm..	4	25	0	9.3	S. 6 E.	0	0	0	.....	.....
802	.420	.712	.645	NW....	N.....	NW....	4	2	4	3.1	N. 18 W.	0	0	0	.....	.....
893	.456	.712	.687	Calm..	W.....	W.....	0	12	4	5.3	West....	1	1	0	.....	.....
794	.795	.896	.828	NW....	NW....	Calm..	12	12	0	8.0	N. 45 W.	8	8	5	.....	.....
000	.898	.890	.929	S.....	Calm..	S.....	4	0	2	2.0	South..	9	1	8	.....	.....
000	.624	.851	.825	Calm..	S.....	S.....	0	45	25	23.3	South..	8	8	8	.....	.10
897	.948	.888	.911	Calm..	NW....	NW....	0	12	25	12.3	N. 45 W.	9	10	9	.....	.05
877	.706	.790	.791	.....	.....	.....	.....	.....	.....	5.2	S. 39 W.	5.1	4.9	5.5	.....	.59
000	1.000	.876	.959	NW....	NW....	S.....	12	2	4	3.9	N. 59 W.	2	9	10	.....	.05
954	.848	1.000	.934	NW....	NW....	NW....	2	4	12	6.0	N. 45 W.	8	9	10	.....	.....
000	.058	1.000	.686	NW....	Calm..	N.....	2	0	2	1.2	N. 22 W.	9	10	10	.....	.06
000	.815	.916	.910	NW....	NW....	W.....	12	4	4	6.3	N. 59 W.	9	0	0	.....	.06
816	.674	.685	.725	NW....	SE.....	W.....	4	4	4	1.3	West....	0	0	0	.....	.....
855	.476	.797	.709	SW....	SW....	W.....	4	12	4	6.3	S. 54 W.	0	0	0	.....	.....
917	.697	.826	.813	NW....	NW....	NW....	4	12	12	9.3	N. 45 W.	8	0	0	.....	.....
920	.815	.694	.810	W.....	SE.....	SE.....	2	4	4	2.2	S. 33 E.	10	6	10	.....	.....
926	.800	.804	.843	Calm..	S.....	W.....	0	4	4	2.0	S. 45 W.	1	4	0	.....	.....
941	.708	1.100	.883	S.....	S.....	Calm..	25	4	0	9.7	South..	8	2	0	.....	.....
943	.847	1.000	.930	W.....	S.....	Calm..	2	2	0	1.0	S. 45 W.	10	10	10	.....	.....
909	.853	1.000	.921	S.....	W.....	W.....	35	35	35	26.3	S. 63 W.	8	10	0	.....	.....
000	.880	.658	.846	SW....	NW....	W.....	12	2	12	7.7	S. 72 W.	0	4	0	.....	.....
000	.892	1.000	.964	W.....	W.....	W.....	25	12	4	13.7	West....	0	1	0	.....	.....
750	.777	1.000	.812	W.....	SW....	W.....	12	4	2	5.7	S. 81 W.	0	0	0	.....	.....
000	.757	.832	.863	SW....	S.....	SE.....	4	45	25	22.3	S. 12 E.	0	10	10	.....	.....
920	.831	.933	.911	SW....	Calm..	NW....	25	0	2	8.3	S. 50 W.	9	10	0	.....	.....
000	.945	1.000	.982	SW....	S.....	Calm..	2	2	0	0.7	S. 68 W.	10	10	10	.....	.39
000	.903	.880	.928	NW....	NW....	W.....	4	12	12	8.7	N. 64 W.	8	4	0	.....	.....
000	.800	1.000	.933	W.....	W.....	W.....	12	2	12	8.7	West....	0	8	10	.....	.28
870	.784	1.000	.885	W.....	W.....	W.....	12	2	12	8.7	West....	4	10	0	.....	.07
000	.777	1.000	.926	W.....	SW....	SW....	12	4	4	6.0	S. 72 W.	0	1	0	.....	.....
000	.575	.682	.752	W.....	S.....	S.....	2	12	12	8.3	S. 5 W.	10	3	0	.....	.....
925	.606	.775	.769	S.....	S.....	SW....	2	12	4	5.7	S. 9 W.	0	4	1	.....	.....
893	.577	.829	.766	SW....	W.....	W.....	25	2	4	9.9	S. 53 W.	8	1	5	.....	.....
938	.623	.931	.831	W.....	Calm..	NW....	2	0	2	1.2	N. 68 W.	10	10	0	.....	.....
922	.740	.938	.867	W.....	W.....	Calm..	4	2	0	2.0	West....	0	10	10	.....	.....
922	.816	.898	.879	NW....	NW....	W.....	12	12	4	9.0	N. 51 W.	10	4	8	.....	.14
896	.930	.926	.917	W.....	S.....	S.....	4	12	25	12.7	S. 6 W.	2	3	7	.....	.....
903	.694	.880	.826	Calm..	S.....	S.....	0	12	35	15.7	South..	0	1	0	.....	.....
941	.747	.641	.776	S.....	SW....	NW....	45	4	2	15.7	S. 5 W.	2	8	6	.....	.....
937	.751	.884	.857	.....	.....	.....	.....	.....	.....	5.2	S. 54 W.	4.7	4.9	3.8	.....	1.05



*Reductions of the monthly meteorological register of the survey of*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
					7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.
1865.																		
Nov.	1	29.359	29.236	29.098	29.231	31.5	41.0	37.0	33.0	43.5	37.5	38.0	50.0	30.5	161.	224.	201.	195
	2	29.164	29.278	29.309	29.250	37.0	37.5	33.0	37.0	38.5	33.0	36.2	41.5	33.0	220.	212.	187.	207
	3	29.055	28.881	28.887	28.941	31.0	49.5	41.0	32.0	50.0	44.0	42.0	52.0	29.0	162.	347.	218.	242
	4	29.029	29.187	29.341	29.186	31.5	29.5	28.5	32.5	30.5	29.0	30.7	40.0	27.0	166.	153.	151.	157
	5	29.463	29.350	29.075	29.296	23.0	31.0	32.0	23.5	34.5	33.0	30.3	47.0	21.0	118.	134.	164.	140
	6	29.016	29.286	29.513	29.272	32.0	31.5	28.0	33.0	34.0	29.5	32.2	39.0	25.5	168.	149.	136.	151
	7	29.565	29.461	29.296	29.441	25.5	34.0	36.0	26.0	36.0	40.0	34.0	41.5	25.0	132.	170.	160.	154
	8	29.165	29.288	29.462	29.305	32.0	38.5	36.0	34.5	44.5	37.5	38.8	50.5	33.5	149.	156.	192.	166
	9	29.595	29.773	29.849	29.739	31.0	32.5	32.0	32.5	34.0	33.0	33.2	36.0	31.0	157.	166.	164.	164
	10	29.932	29.869	29.870	29.890	31.5	38.0	31.5	31.5	44.0	34.0	36.5	51.5	30.0	172.	151.	145.	159
	11	29.730	29.648	29.516	29.631	34.0	43.5	42.5	35.0	49.5	48.0	42.5	52.0	33.0	183.	205.	265.	214
	12	29.411	29.369	29.313	29.364	42.5	53.5	45.5	47.5	62.5	51.0	53.7	66.0	41.5	207.	242.	273.	224
	13	29.260	29.116	28.959	29.112	43.0	55.5	35.5	45.0	68.5	48.0	53.8	69.0	44.5	251.	269.	045.	186
	14	28.936	28.890	28.881	28.902	44.5	53.5	50.0	47.0	61.0	54.5	54.2	65.0	46.0	261.	310.	301.	291
	15	28.932	28.950	28.912	28.931	48.5	54.0	50.0	52.0	59.5	52.5	51.7	60.0	46.0	295.	345.	322.	323
	16	28.866	29.793	28.710	28.890	47.0	50.5	51.0	48.0	53.0	53.0	51.3	54.0	46.0	310.	334.	342.	331
	17	29.119	29.357	29.421	29.299	35.0	35.0	33.0	36.0	37.5	35.0	36.2	40.0	33.0	191.	188.	162.	180
	18	29.419	29.339	29.304	29.354	30.0	39.5	33.0	31.5	46.0	35.5	37.7	49.0	30.0	150.	158.	154.	155
	19	29.300	29.193	29.130	29.208	34.5	45.0	42.0	35.0	49.0	45.0	43.0	52.5	33.0	193.	247.	222.	223
	20	29.129	29.193	29.252	29.191	36.0	40.5	36.0	38.5	43.0	38.0	39.8	44.5	36.0	179.	220.	186.	198
	21	29.312	29.328	29.286	29.309	33.5	40.0	36.5	34.0	41.5	38.5	38.0	45.0	34.5	186.	228.	183.	199
	22	29.198	29.219	29.258	29.225	35.5	38.5	38.5	37.0	40.5	41.0	39.5	42.0	35.5	188.	208.	201.	198
	23	29.303	29.301	29.294	29.299	38.5	45.0	35.0	39.5	48.5	36.0	41.3	51.0	33.0	221.	253.	191.	222
	24	29.171	29.062	29.164	29.132	35.5	47.5	38.5	36.0	54.0	41.0	43.7	55.5	.....	201.	243.	201.	215
	25	29.320	29.434	29.452	29.402	34.0	39.5	31.0	36.0	47.5	34.0	39.2	52.0	32.5	170.	139.	139.	149
	26	29.433	29.326	29.380	29.380	30.0	42.5	34.0	31.0	50.5	37.0	39.5	53.0	26.0	155.	167.	157.	160
	27	29.481	29.528	29.534	29.514	30.0	32.5	31.0	32.0	34.5	32.0	32.8	42.0	30.5	144.	159.	162.	155
	28	29.467	29.455	29.362	29.424	29.0	34.0	29.0	29.0	35.0	32.0	31.3	38.0	27.0	160.	183.	144.	164
	29	29.183	28.911	28.671	28.955	27.0	33.5	34.5	27.0	37.5	36.0	33.5	40.5	20.0	147.	140.	180.	156
	30	28.433	29.441	28.521	29.465	33.5	31.0	28.5	34.5	31.5	29.5	31.5	39.5	26.0	179.	168.	146.	164
Means....		29.258	29.255	29.234	29.250	.....	.....	.....	36.5	44.7	38.7	39.9	.....	.....	186.	210.	189.	195
Dec.																		
	1	28.744	28.817	28.808	28.790	25.5	28.5	25.0	25.5	28.5	26.0	26.7	35.0	24.0	132.	156.	123.	139
	2	28.715	28.858	29.018	28.864	29.0	34.5	34.0	29.5	35.0	34.0	32.8	41.0	24.0	154.	193.	196.	181
	3	29.284	29.246	29.182	29.237	32.0	24.5	34.0	32.0	35.0	34.0	33.7	40.0	31.0	181.	012.	196.	130
	4	29.306	29.557	29.630	29.498	27.0	24.5	16.0	27.0	26.0	16.5	23.2	30.0	14.5	147.	115.	084.	115
	5	29.575	29.546	29.471	29.531	13.0	31.5	22.5	14.0	35.0	25.0	24.7	39.5	11.0	067.	137.	092.	099
	6	29.262	29.164	29.179	29.202	20.0	34.0	30.5	21.0	40.0	32.5	31.2	45.0	18.0	096.	118.	148.	121
	7	29.421	29.453	29.538	29.471	16.5	17.5	14.5	17.0	19.5	15.5	17.3	24.0	12.0	086.	073.	073.	077
	8	29.538	29.471	29.373	29.461	17.5	24.5	23.5	18.0	26.0	26.0	23.3	37.5	14.5	090.	115.	098.	101
	9	29.163	28.992	28.966	29.040	20.0	31.0	22.5	21.0	33.0	24.0	26.0	.....	.....	102.	151.	104.	119
	10	28.804	28.765	28.878	28.816	27.0	33.5	32.5	28.0	36.5	32.5	32.3	.....	.....	141.	152.	185.	159
	11	28.987	28.958	28.823	28.923	28.0	33.5	33.5	29.0	35.0	33.5	32.5	.....	.....	148.	173.	192.	171
	12	28.403	28.771	29.220	28.798	38.5	19.5	3.0	39.5	20.5	3.0	21.0	.....	.....	221.	095.	050.	122
	13	29.517	29.558	29.539	29.538	-5.5	5.5	-4.0	-5.5	6.0	-3.0	-2.5	.....	.....	036.	050.	025.	037
	14	29.540	29.601	29.611	29.584	2.0	8.0	0.5	2.0	8.5	0.5	3.7	.....	.....	047.	067.	044.	049
	15	29.536	29.448	29.396	29.460	4.0	7.0	-0.5	5.0	8.0	-0.5	4.2	.....	.....	041.	048.	042.	044
	16	29.225	29.079	29.029	29.111	2.0	16.0	15.5	2.0	17.5	16.5	12.0	.....	.....	047.	073.	076.	063
	17	29.095	29.183	29.305	29.194	17.5	26.5	23.0	18.0	27.5	23.5	23.0	.....	.....	090.	132.	118.	113
	18	29.308	29.196	28.968	29.157	23.5	29.0	16.5	23.5	29.5	26.5	26.5	.....	.....	126.	154.	144.	

*northern and northwestern lakes, at Marquette, Michigan.*

VAPOR.			WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.			Direction. From whence.			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.							
1 .794	.860	.835	E.....	SE.....	Calm..	4	35	0	12.7	S. 49 E.	1	10	10	.....	.25
0 .906	1.000	.969	NW....	W.....	Calm..	2	4	0	1.8	N. 75 W.	10	10	1	.....	.....
5 .963	.762	.874	S.....	S.....	S.....	45	45	2	30.7	South ..	1	1	6	.....	.....
3 .892	.944	.911	NW....	NW....	NW....	4	25	25	18.0	N. 45 W.	9	8	8	.....	.05
3 .669	.893	.818	NW....	SW....	S.....	12	12	2	6.0	S. 83 W.	1	7	10	.....	.....
2 .760	.834	.829	NW....	N.....	NW....	45	35	25	32.7	N. 30 W.	10	6	9	.....	.....
9 .802	.645	.785	S.....	S.....	S.....	25	12	25	20.7	South ..	5	8	10	.....	.....
4 .528	.856	.709	SW....	NW....	N.....	12	45	12	18.3	N. 50 W.	0	5	10	.....	.....
3 .843	.893	.861	N.....	NW....	Calm..	12	4	0	5.0	N. 9 W.	9	9	10	.....	.....
0 .522	.760	.761	Calm..	SE.....	SE.....	0	12	25	12.3	S. 45 E.	8	0	10	.....	.....
3 .577	.856	.777	S.....	S.....	SW....	4	4	35	13.7	S. 37 W.	1	4	0	.....	.....
3 .515	.622	.588	SW....	SW....	W.....	35	12	35	25.3	S. 64 W.	3	1	0	.....	.....
0 .386	.133	.420	Calm..	S.....	S.....	0	25	25	16.7	South ..	0	0	0	.....	.....
0 .580	.709	.699	S.....	SW....	S.....	2	12	12	8.0	S. 20 W.	0	2	0	.....	.....
1 .678	.829	.756	S.....	Calm..	S.....	12	0	25	12.3	South ..	4	4	0	.....	.....
5 .830	.864	.873	SE.....	S.....	S.....	12	12	25	15.3	S. 10 E.	8	8	8	.....	.....
0 .773	.797	.823	NW....	NW....	W.....	25	4	4	10.7	N. 50 W.	10	8	2	.....	.....
3 .507	.750	.700	W.....	E.....	S.....	2	2	4	1.3	South ..	8	0	0	.....	.....
3 .710	.762	.807	S.....	S.....	S.....	2	45	25	24.0	South ..	8	9	10	.....	.....
3 .792	.811	.790	S.....	Calm..	Calm..	4	0	0	1.3	South ..	0	5	10	.....	.....
7 .869	.771	.862	Calm..	.....	W.....	0	.....	4	2.0	West....	4	.....	10	.....	.14
5 .822	.782	.820	NW....	NW....	NW....	4	4	12	6.7	N. 45 W.	8	9	10	.....	.....
9 .743	.900	.851	NW....	Calm..	S.....	4	0	2	3.2	S. 17 W.	9	0	0	.....	.....
9 .587	.782	.773	SE.....	S.....	Calm..	4	25	0	9.3	S. 6 E.	0	0	0	.....	.....
2 .420	.712	.645	NW....	N.....	NW....	4	2	4	3.1	N. 18 W.	0	0	0	.....	.....
3 .456	.712	.687	Calm..	W.....	W.....	0	12	4	5.3	West....	1	1	0	.....	.....
1 .795	.896	.828	NW....	NW....	Calm..	12	12	0	8.0	N. 45 W.	8	8	5	.....	.....
0 .898	.890	.929	S.....	Calm..	S.....	4	0	2	2.0	South ..	9	1	8	.....	.....
0 .624	.851	.825	Calm..	S.....	S.....	0	45	25	23.3	South ..	8	8	8	.....	.10
7 .948	.888	.911	Calm..	NW....	NW....	0	12	25	12.3	N. 45 W.	9	10	9	.....	.05
7 .706	.790	.791	.....	.....	.....	.....	.....	.....	5.2	S. 39 W.	5.1	4.9	5.5	.....	.59
0 1.000	.876	.959	NW....	NW....	S.....	12	2	4	3.9	N. 59 W.	2	9	10	.....	.05
1 .848	1.000	.934	NW....	NW....	NW....	2	4	12	6.0	N. 45 W.	8	9	10	.....	.....
0 .058	1.000	.686	NW....	Calm..	N.....	2	0	2	1.2	N. 22 W.	9	10	10	.....	.06
0 .815	.916	.910	NW....	NW....	W.....	12	4	4	6.3	N. 59 W.	9	0	0	.....	.06
3 .674	.685	.725	NW....	SE.....	W.....	4	4	4	1.3	West....	0	0	0	.....	.....
5 .476	.797	.709	SW....	SW....	W.....	4	12	4	6.3	S. 54 W.	0	0	0	.....	.....
7 .697	.826	.813	NW....	NW....	NW....	4	12	12	9.3	N. 45 W.	8	0	0	.....	.....
0 .815	.694	.810	W.....	SE.....	SE.....	2	4	4	2.2	S. 33 E.	10	6	10	.....	.....
3 .800	.804	.843	Calm..	S.....	W.....	0	4	4	2.0	S. 45 W.	1	4	0	.....	.....
1 .708	1.100	.883	S.....	S.....	Calm..	25	4	0	9.7	South ..	8	2	0	.....	.....
3 .847	1.000	.930	W.....	S.....	Calm..	2	2	0	1.0	S. 45 W.	10	10	10	.....	.....
0 .853	1.000	.921	S.....	W.....	W.....	35	35	35	26.3	S. 63 W.	8	10	0	.....	.....
0 .880	.658	.846	SW....	NW....	W.....	12	2	12	7.7	S. 72 W.	0	4	0	.....	.....
0 .892	1.000	.964	W.....	W.....	W.....	25	12	4	13.7	West....	0	1	0	.....	.....
0 .777	1.000	.842	W.....	SW....	W.....	12	4	2	5.7	S. 81 W.	0	0	0	.....	.....
0 .757	.832	.863	SW....	S.....	SE.....	4	45	25	22.3	S. 12 E.	0	10	10	.....	.....
0 .831	.933	.911	SW....	Calm..	NW....	25	0	2	8.3	S. 50 W.	9	10	0	.....	.....
0 .945	1.000	.982	SW....	S.....	Calm..	2	2	0	0.7	S. 68 W.	10	10	10	.....	.39
0 .903	.880	.928	NW....	NW....	W.....	4	12	12	8.7	N. 64 W.	8	4	0	.....	.....
0 .800	1.000	.933	W.....	W.....	W.....	12	2	12	8.7	West....	0	8	10	.....	.28
0 .784	1.000	.885	W.....	W.....	W.....	12	2	12	8.7	West....	4	10	0	.....	.07
0 .777	1.000	.926	W.....	SW....	SW....	12	4	4	6.0	S. 72 W.	0	1	0	.....	.....
0 .575	.682	.752	W.....	S.....	S.....	2	12	12	8.3	S. 5 W.	10	3	0	.....	.....
5 .606	.775	.769	S.....	S.....	SW....	2	12	4	5.7	S. 9 W.	0	4	1	.....	.....
3 .577	.829	.766	SW....	W.....	W.....	25	2	4	9.9	S. 53 W.	8	1	5	.....	.....
3 .623	.931	.831	W.....	Calm..	NW....	2	0	2	1.2	N. 68 W.	10	10	0	.....	.....
2 .740	.938	.867	W.....	W.....	Calm..	4	2	0	2.0	West....	0	10	10	.....	.....
2 .816	.898	.879	NW....	NW....	W.....	12	12	4	9.0	N. 51 W.	10	4	8	.....	.14
5 .930	.926	.917	W.....	S.....	S.....	4	12	25	12.7	S. 6 W.	2	3	7	.....	.....
3 .694	.880	.826	Calm..	S.....	S.....	0	12	35	15.7	South ..	0	1	0	.....	.....
1 .747	.641	.776	S.....	SW....	NW....	45	4	2	15.7	S. 5 W.	2	8	6	.....	.....
7 .751	.884	.857	.....	.....	.....	.....	.....	.....	5.2	S. 54 W.	4.7	4.9	3.8	.....	1.05

Reductions of the monthly meteorological register of the survey

Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.					TEMPERATURE—FAHRENHEIT.										VAPOR.			
Date.					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.						Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.																		
March 1	29.182	29.233	29.293	29.235	35.0	39.5	35.0	36.0	42.5	36.0	39.2	43.5	31.5	191.	197.	191.	193.	
2	29.163	29.257	29.040	29.020	36.0	43.5	30.5	36.5	44.5	33.0	38.0	42.5	33.0	245.	263.	141.	203.	
3	29.159	29.326	29.396	29.307	11.0	12.0	75.0	12.0	14.5	8.5	11.7	21.0	70.0	061.	052.	049.	055.	
4	29.421	29.591	29.548	29.520	10.0	20.0	14.5	11.0	23.5	15.5	16.7	22.0	3.5	057.	068.	067.	064.	
5	29.576	29.616	29.604	29.599	9.5	22.0	13.0	10.5	24.5	13.5	16.2	29.5	8.0	049.	039.	072.	053.	
6	29.522	29.603	29.620	29.604	15.0	23.5	13.5	16.5	25.5	15.5	19.2	28.5	8.0	062.	097.	032.	033.	
7	29.653	29.736	29.741	29.720	7.5	16.5	13.0	7.5	17.5	15.0	13.3	21.5	4.5	060.	075.	056.	062.	
8	29.694	29.726	29.565	29.662	13.0	20.0	18.5	14.5	23.0	20.0	19.2	28.5	11.0	061.	074.	029.	033.	
9	29.624	29.621	29.635	29.647	14.0	17.5	10.0	15.0	19.0	11.0	15.0	27.0	8.5	071.	079.	057.	069.	
10	29.533	29.311	29.145	29.330	11.0	36.0	26.0	12.0	39.5	27.5	26.3	40.5	3.5	061.	106.	123.	117.	
11	29.095	29.271	29.320	29.245	17.0	15.0	7.0	17.0	16.0	7.0	13.3	17.5	5.0	094.	074.	059.	055.	
12	29.372	29.443	29.546	29.454	10.0	21.0	12.5	10.0	23.5	12.5	15.3	29.0	4.0	162.	084.	078.	102.	
13	29.706	29.715	29.694	29.705	13.0	27.5	12.0	13.0	31.0	12.0	12.7	33.0	2.5	072.	116.	075.	083.	
14	29.571	29.548	29.556	29.558	14.0	26.0	18.0	15.0	30.0	18.5	21.2	31.5	9.0	071.	085.	033.	046.	
15	29.379	.....	29.020	29.229	9.5	.....	28.0	9.5	.....	28.0	12.5	41.0	7.5	066.	.....	123.	108.	
16	29.576	29.062	29.246	29.275	20.5	11.0	4.0	21.5	11.0	4.0	12.2	42.0	2.0	093.	171.	052.	056.	
17	29.377	29.455	29.298	29.377	-6.5	6.0	1.5	-6.5	7.0	1.5	0.7	18.0	-11.0	033.	046.	046.	046.	
18	29.062	29.144	29.306	29.171	12.5	18.0	8.0	14.0	21.0	8.0	14.3	22.5	7.0	059.	065.	022.	022.	
19	29.432	29.448	29.426	29.435	2.0	15.0	1.0	2.0	17.5	1.0	6.8	18.5	2.0	047.	057.	045.	059.	
20	29.291	29.233	29.180	29.235	5.5	12.0	11.5	5.5	12.5	11.5	9.8	18.5	3.0	056.	069.	073.	066.	
21	29.219	29.268	29.363	29.263	11.0	26.0	14.0	11.5	28.0	14.5	18.0	34.5	6.0	066.	117.	076.	086.	
22	29.433	29.415	29.265	29.371	11.0	32.0	20.0	11.5	28.5	20.0	20.0	31.0	6.0	066.	.....	102.	087.	
23	29.221	29.252	29.276	29.252	21.0	27.0	17.0	21.0	30.0	18.5	23.2	34.5	15.0	113.	113.	077.	115.	
24	29.216	29.276	29.295	29.262	13.5	11.0	6.0	14.0	13.0	7.0	11.3	20.0	5.0	074.	049.	046.	066.	
25	29.391	29.433	29.506	29.443	1.5	13.5	10.5	2.0	15.0	12.0	9.7	19.5	2.0	041.	063.	052.	052.	
26	29.572	29.663	29.683	29.641	11.5	32.0	8.5	11.5	30.0	8.5	16.7	33.5	5.0	073.	.....	063.	066.	
27	29.849	29.650	29.605	29.628	6.0	33.0	16.0	6.0	34.0	15.0	18.3	32.0	5.0	057.	175.	.....	156.	
28	29.434	29.488	29.401	29.441	20.0	24.0	23.0	20.5	25.0	23.0	22.8	32.5	9.0	102.	117.	123.	114.	
29	29.466	29.495	29.363	29.441	15.0	28.0	12.0	16.0	28.0	13.0	19.0	33.5	11.0	074.	133.	063.	087.	
30	29.117	28.952	28.852	28.974	20.5	39.0	33.0	21.5	39.0	33.0	31.2	41.0	12.0	053.	239.	122.	173.	
31	28.591	28.878	29.150	28.873	33.0	32.0	29.0	33.0	33.0	30.0	32.0	37.5	29.0	122.	162.	149.	148.	
Means...	29.387	29.380	29.389	29.388	.....	.....	.....	14.2	24.2	15.9	18.2	.....	.....	.....	064.	112.	068.	083.
April																		
1	29.388	29.415	29.394	29.399	26.0	33.0	25.0	28.0	35.5	26.0	29.8	43.5	17.0	117.	156.	139.	139.	
2	29.375	29.296	29.305	29.325	31.0	40.0	34.5	31.0	42.0	36.5	36.5	44.0	24.5	174.	221.	174.	189.	
3	29.176	29.132	29.145	29.151	35.0	41.0	40.0	35.0	42.0	41.0	39.3	44.0	32.0	204.	244.	235.	226.	
4	29.073	29.110	29.195	29.126	38.5	48.0	33.0	39.0	50.0	34.0	41.0	36.0	33.0	228.	309.	175.	206.	
5	29.123	29.295	29.395	29.271	34.0	36.5	31.0	34.0	38.0	31.0	34.3	37.0	29.0	196.	193.	174.	189.	
6	29.421	29.512	29.526	29.508	25.0	25.5	21.0	25.0	27.0	22.5	24.8	33.5	21.0	135.	120.	086.	114.	
7	29.596	29.576	29.541	29.571	24.0	35.0	19.5	22.5	37.5	31.0	28.0	39.5	13.0	112.	171.	086.	123.	
8	29.585	29.518	29.537	29.547	15.0	34.5	21.0	16.0	41.5	22.0	26.5	43.5	09.0	074.	092.	101.	082.	
9	29.471	29.415	29.351	29.412	29.0	41.0	32.5	32.0	50.0	37.0	39.7	51.0	19.5	126.	139.	126.	153.	
10	29.168	29.107	29.155	29.143	33.0	40.0	34.0	34.5	43.5	35.5	37.8	45.5	33.0	169.	212.	176.	189.	
11	29.163	29.185	28.892	29.020	35.0	37.0	40.0	36.5	39.0	42.5	39.3	47.5	34.0	184.	194.	215.	215.	
12	28.767	28.825	29.251	28.948	40.0	41.5	32.0	41.0	43.0	34.0	39.3	45.0	33.0	235.	222.	153.	206.	
13	29.474	29.480	29.351	29.435	32.0	40.0	32.5	33.0	44.0	36.5	37.8	47.0	24.5	168.	195.	126.	153.	
14	29.018	29.265	29.433	29.237	37.0	36.0	30.0	38.5	39.5	33.0	37.0	46.0	32.5	201.	166.	122.	153.	
15	29.465	29.425	29.321	29.424	32.0	39.5	30.5	36.0	45.0	34.5	38.5	48.5	25.0	129.	236.	124.	153.	
16	29.333	29.250	29.278	29.290	33.0	44.0	40.0	36.0	54.5	42.0	46.2	56.0	28.5	149.	262.	149.	189.	
17	29.137	29.158	29.263	29.186	46.0	60.0	46.5	52.0	73.0	48.0	57.7	74.0	44.5	232.	345.	291.	306.	
18	29.223	29.358	29.483	29.355	39.0	40.0	34.0	40.0	41.0	35.0	38.7	44.0	24.0	225.	235.	183.	206.	
19	29.516	29.435	29.228	29.393	31.5	33.5	34.0	32.0	34.5	34.5	33.7	38.0	30.0	168.	163.	189.	189.	
20	28.858	28.715	28.682	28.752	36.5	53.0	46.5	36.5	61.5	50.5	49.5	64.5	33.0	216.	220.	222.	222.	
21	28.594	28.740	29.853	29.062	41.5	50.0	40.0	44.5	57.5	43.5	42.5	60.0	41.0	216.	222.	202.	202.	
22	29.045	29.098	29.133	29.092	39.0	44.5	33.0	42.5	50.5	35.0	42.7	52.5	34.0	221.	222.	162.	189.	
23	29.098	29.118	29.122	29.113	32.5	40.0	32.0	36.0	51.0	33.0	40.0	52.5	27.5	139.	104.	162.	189.	
24	29.108	29.097	29.040	29.082	30.5	36.0	29.0	33.										

northern and northwestern lakes, at Marquette, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.			Direction, From whence.			Velocity, In miles, per hour.			Resultant velocity, in miles per hour.	Resultant direction.						
	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.			9 p. m.	7 a. m.	2 p. m.	9 p. m.		
0	.709	.900	.836	Calm..	Calm..	Calm	0	0	0	Calm.	Calm...	10	6	10		
0	.879	.750	.860	Calm..	S.....	SW.	0	12	12	7.3	S. 23 W.	10	10	4		.32
4	.635	.780	.740	NW....	W.....	NW.	25	25	12	19.3	N. 63 W.	8	4	0		
7	.540	.743	.693	NW....	NW....	NW.	12	25	12	20.7	N. 45 W.	3	1	0		
6	.680	.907	.761	W.....	N.....	NW.	12	12	4	7.0	N. 45 W.	0	0	0		
8	.694	.575	.672	W.....	NW....	NW.	4	12	12	9.0	N. 51 W.	4	6	0		
0	.761	.648	.803	NW....	NW....	W..	25	35	12	23.0	N. 52 W.	3	0	0		
0	.598	.776	.701	W.....	W.....	Calm	12	2	0	4.7	West...	5	2	10		
3	.768	.797	.796	N.....	N.....	Calm	4	2	0	2.0	North..	10	4	0		.24
4	.685	.824	.771	Calm..	S.....	Calm	0	2	0	0.7	South..	0	5	10		
0	.829	1.000	.943	NW....	N.....	N...	35	25	2	19.0	N. 25 W.	10	10	0		.31
0	.669	1.000	.890	Calm..	S.....	Calm	0	4	0	1.3	South..	0	0	10		
0	.633	1.000	.878	S.....	SE....	Calm	2	2	0	1.3	S. 21 E.	9	1	10		
3	.569	.921	.771	W.....	W.....	W..	4	4	2	3.3	West...	0	0	0		
0	.....	1.000	1.000	Calm..	.....	W..	0	.....	4	1.3	West...	0	10	10		.03
0	1.000	1.000	.930	NW....	NW....	N...	12	25	25	19.3	N. 27 W.	10	10	10		.11
0	.769	1.000	.923	NW....	NW....	E...	12	4	2	5.0	N. 38 W.	0	0	10		
5	.570	1.000	.765	NW....	NW....	NW.	4	35	4	14.3	N. 45 W.	4	5	0		
10	.597	1.000	.866	Calm..	E.....	Calm	0	2	0	0.7	East...	8	6	0		
10	.904	1.000	.968	E.....	N.....	NW.	2	4	4	2.3	N. 7 W.	8	8	0		
11	.768	.910	.860	NW....	Calm..	Calm	12	0	0	4.0	N. 45 W.	10	8	0		
11	.....	1.000	.630	Calm..	E.....	Calm	0	2	0	0.7	East...	10	2	6		.18
10	.675	.765	.813	N.....	NW....	W..	12	4	2	5.0	N. 19 W.	10	2	6		.14
18	.623	.769	.767	NW....	NW....	W..	4	25	4	10.7	N. 50 W.	10	6	10		
19	.733	.706	.766	NW....	NW....	W..	12	45	12	22.0	N. 38 W.	0	4	0		
10	.....	1.000	1.000	NW....	E.....	Calm	4	2	0	1.0	N. 15 W.	0	0	0		
10	.895	.....	.632	Calm..	E.....	NW.	0	2	2	0.7	N. 17 E.	10	2	0		
16	.872	1.000	.933	N.....	N.....	N...	4	12	25	13.7	North..	10	10	10		.33
19	1.000	.810	.820	NW....	E.....	Calm	12	2	0	3.7	N. 36 W.	0	0	4		
10	1.000	1.000	.930	E.....	SE....	SE..	4	45	25	24.3	S. 47 E.	8	8	10		
10	.893	.890	.922	Calm..	NW....	NW.	0	12	4	5.3	N. 45 W.	10	8	8		.31
16	.748	.882	.829	.....	.....	.....	.....	.....	.....	5.5	N. 44 W.	5.8	4.4	4.4		1.97
18	.750	.876	.798	E.....	W.....	Calm	2	2	0	.....	.....	2	2	8		
10	.829	.804	.878	Calm..	SE....	Calm	0	2	0	0.7	S. 45 E.	8	5	10		
10	.914	.912	.942	Calm..	SE....	Calm	0	4	0	1.3	S. 45 E.	8	5	0		.12
13	.856	.895	.901	Calm..	S.....	W..	0	2	2	1.0	S. 45 W.	5	4	10		.16
10	.856	1.000	.952	W.....	Calm..	Calm	2	0	0	0.7	West...	6	6	6		.08
10	.821	.794	.872	N.....	NW....	NW.	4	12	4	6.3	N. 37 W.	10	10	10		.06
12	.762	.780	.785	E.....	E.....	NW.	2	2	4	1.0	N. 38 E.	2	0	0		
29	.374	.860	.688	Calm..	SE....	W..	0	2	2	0.7	S. 16 W.	0	0	0		
14	.386	.572	.551	SW....	SE....	S...	4	12	4	5.3	S. 19 E.	4	4	10		
15	.750	.849	.815	SE....	W.....	SE..	2	2	2	1.0	S. 15 E.	8	6	10		.10
13	.816	.789	.819	S.....	SE....	S...	4	12	45	19.3	S. 8 E.	4	6	10		
12	.873	.792	.859	Calm..	W.....	W..	0	4	4	2.7	West...	6	8	0		.18
13	.677	.572	.714	W.....	E.....	S...	2	4	12	4.3	S. 9 E.	5	5	10		
60	.685	.703	.749	SW....	W.....	NW.	12	25	12	14.0	West...	6	6	0		.17
10	.954	.622	.729	SE....	SE....	S...	2	2	2	1.7	S. 34 E.	0	0	0		
05	.881	.454	.680	S.....	S.....	S...	12	35	12	19.7	South..	0	1	1		
18	.425	.886	.636	S.....	SW....	NW.	45	25	12	20.3	S. 26 N.	4	2	2		
10	.912	.898	.907	NW....	NW....	NW.	4	12	2	6.0	N. 45 W.	10	8	10		.30
48	.845	.948	.914	NW....	Calm..	NW.	2	0	4	2.0	N. 45 W.	10	10	10		.36
00	.532	.686	.739	E.....	S.....	S...	2	35	35	2.3	S. 2 E.	10	1	1		.22
23	.553	.713	.663	SW....	W.....	NW.	12	4	4	5.3	S. 71 W.	0	4	6		
26	.557	.797	.693	NW....	N.....	Calm	12	2	0	4.3	N. 39 W.	4	0	0		
57	.276	.893	.609	Calm..	SE....	W..	0	2	4	1.0	S. 62 E.	0	0	0		
64	.605	.694	.654	NW....	N.....	NW.	25	12	2	12.3	N. 31 W.	0	0	0		
19	.811	.582	.604	N.....	N.....	W..	25	25	2	16.7	N. 2 W.	0	0	0		
42	.439	.653	.511	NW....	E.....	S...	4	2	2	0.3	N. 45 W.	0	0	10		
43	.291	.562	.399	S.....	S.....	E...	12	45	2	19.0	S. 2 E.	0	0	2		
14	.515	.577	.595	NW....	W.....	W..	25	35	4	19.7	N. 73 W.	6	4	0		
76	.501	.747	.575	W.....	N.....	Calm	12	12	0	5.7	N. 45 W.	0	1	1		
74	.732	.893	.791	NW....	NE....	Calm	2	4	0	1.7	N. 16 E.	10	8	10		
136	.672	.760	.734	.....	.....	.....	.....	.....	.....	9.0	S. 46 W.	4.3	3.5	4.6		1.75



*Reductions of the monthly meteorological register of the survey*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.					o	o	o	o	o	o	o	o	o					
May 1	29.138	29.361	29.301	29.267	32.0	30.0	30.5	33.0	33.0	31.5	33.2	44.0	29.0		142	132	133	136
2	29.366	.....	29.404	29.385	34.5	.....	29.0	37.0	.....	31.0	34.0	52.5	27.0		166	.....	137	.....
3	29.268	29.222	29.213	29.234	41.0	45.0	41.0	51.5	54.0	47.5	51.0	60.0	30.5		129	181	172	154
4	29.245	29.235	29.248	29.256	38.0	39.0	35.0	43.0	44.0	37.5	41.5	53.0	34.5		164	173	171	169
5	29.281	29.368	29.424	29.358	36.0	41.0	31.5	37.0	44.0	32.5	37.8	45.0	31.5		199	218	157	.....
6	29.507	29.566	29.520	29.531	38.5	41.0	33.0	41.0	45.0	35.0	38.3	48.5	31.0		201	205	182	.....
7	29.490	29.435	29.339	29.421	41.0	57.0	38.5	45.0	53.5	42.0	46.8	57.0	28.0		205	373	181	.....
8	29.193	29.105	29.011	29.103	49.0	51.0	45.0	56.0	57.0	47.0	53.3	63.5	40.5		255	285	273	.....
9	29.120	29.160	29.160	29.147	42.5	45.5	38.0	47.0	49.0	41.0	45.7	63.5	40.0		182	253	190	.....
10	29.192	28.970	28.970	29.044	48.0	61.5	50.5	57.5	79.5	56.5	62.2	81.0	39.0		210	306	215	.....
11	29.068	29.015	28.925	29.003	41.5	50.5	53.0	44.5	58.5	56.0	54.7	63.5	41.0		216	262	257	.....
12	28.923	29.955	29.246	29.075	54.5	52.5	39.0	59.5	67.0	43.0	56.5	69.0	42.0		329	334	186	.....
13	29.391	29.458	29.433	29.427	35.0	37.0	29.5	38.5	43.0	31.0	37.5	47.0	30.0		158	142	146	.....
14	29.374	29.274	29.176	29.275	39.5	44.5	37.5	46.0	51.0	41.0	46.0	54.0	29.0		158	208	179	.....
15	28.909	29.068	29.188	29.055	35.0	32.0	30.0	39.5	35.0	34.0	36.2	44.0	33.0		145	142	121	.....
16	29.362	29.389	29.211	29.321	37.0	42.0	31.0	41.0	17.0	31.0	39.7	47.5	30.0		168	202	174	.....
17	29.025	28.985	28.835	28.948	40.0	43.5	50.0	47.0	47.5	55.0	49.8	59.0	28.5		156	224	226	.....
18	29.061	29.155	29.136	29.117	39.0	44.0	37.5	41.0	48.0	38.5	42.5	49.0	37.0		212	246	245	.....
19	28.975	28.774	28.909	28.886	45.5	67.0	63.0	49.0	86.0	74.0	69.7	86.5	35.0		279	417	163	.....
20	28.898	28.987	29.168	29.018	53.5	52.5	40.0	59.0	68.0	46.5	57.8	68.0	40.0		153	160	139	.....
21	29.356	29.445	29.466	29.422	37.5	39.0	31.0	43.0	45.0	34.0	40.7	46.5	32.0		177	207	164	.....
22	29.474	29.410	29.436	29.440	39.5	45.0	36.5	44.5	52.0	40.5	45.7	56.5	28.5		154	211	169	.....
23	29.484	29.459	29.382	29.442	39.5	47.5	42.0	46.0	56.0	49.5	50.5	63.0	35.0		158	217	162	.....
24	29.304	29.274	29.233	29.270	48.0	50.5	43.5	56.0	60.5	50.0	57.5	63.5	45.0		151	229	197	.....
25	29.178	29.193	29.149	29.170	43.5	48.0	38.0	52.0	57.0	41.0	50.0	58.5	40.0		171	217	190	.....
26	29.026	29.041	29.037	29.035	42.0	43.0	38.0	47.0	47.0	39.0	44.3	53.0	32.0		202	225	216	.....
27	29.007	29.049	29.105	29.054	41.5	40.0	39.5	43.0	43.5	42.5	43.0	47.5	36.5		242	202	197	.....
28	29.141	29.123	29.074	29.113	40.5	45.5	40.5	45.0	52.0	45.0	47.3	54.0	40.0		193	219	180	.....
29	29.059	29.053	28.046	28.719	45.0	52.0	50.0	52.0	61.0	56.0	56.3	64.5	44.0		207	289	282	.....
30	29.022	29.184	29.242	29.149	38.5	38.0	32.0	39.0	44.0	35.0	39.3	52.5	34.0		227	151	142	.....
31	29.388	29.357	29.351	29.365	43.0	46.5	37.5	50.0	51.5	42.0	48.8	58.0	31.0		186	204	166	.....
Means....	29.202	29.206	29.172	29.195	.....	.....	.....	46.4	52.7	43.1	47.1	.....	.....		190	227	187	.....
June 1	29.245	29.214	29.271	29.243	47.0	57.5	43.5	54.0	65.5	46.5	55.3	69.5	40.0		231	367	337	.....
2	29.202	29.192	29.113	29.169	51.5	55.5	53.0	57.0	62.0	59.5	59.5	69.0	41.0		308	335	317	.....
3	29.065	29.020	29.003	29.029	59.0	61.0	51.5	68.0	72.5	75.5	66.0	80.0	48.5		380	383	285	.....
4	28.990	28.991	29.025	29.002	57.0	9.5	57.0	65.0	69.0	65.0	66.3	75.5	55.0		359	382	329	.....
5	29.006	28.945	28.881	28.944	53.5	54.0	53.0	66.5	57.5	55.0	56.3	82.0	50.0		383	371	376	.....
6	28.722	28.816	28.981	28.840	50.0	51.0	45.5	50.0	53.5	46.5	50.0	59.5	45.0		361	311	285	.....
7	29.116	29.172	29.141	29.143	55.0	53.0	48.0	56.0	55.0	48.0	53.0	58.5	46.0		420	376	335	.....
8	29.086	28.858	28.800	28.915	54.0	60.0	62.0	55.0	67.0	63.0	61.7	68.0	43.5		404	628	542	.....
9	28.942	29.050	29.237	29.076	52.0	58.5	45.0	58.0	72.5	47.0	59.2	73.5	40.0		309	305	273	.....
10	29.479	29.614	29.589	29.561	41.0	45.5	37.5	48.0	51.5	40.5	46.7	55.0	40.0		166	225	183	.....
11	29.513	29.357	29.333	29.401	43.0	51.0	43.0	46.5	54.0	44.0	48.2	54.5	35.0		232	335	304	.....
12	29.169	29.075	28.978	29.074	48.0	29.5	64.0	49.0	73.0	63.0	61.7	73.5	30.0		322	673	542	.....
13	28.921	28.910	28.863	28.898	53.0	58.5	54.5	53.5	61.5	55.5	56.8	69.0	52.0		396	422	464	.....
14	28.853	28.925	28.985	28.921	53.0	56.5	53.0	56.5	64.5	58.0	59.7	67.0	49.0		356	351	326	.....
15	29.005	29.055	29.071	29.044	56.0	57.5	53.0	49.5	58.5	48.0	57.3	67.0	53.5		403	454	389	.....
16	29.103	29.166	29.222	29.164	47.0	51.5	46.5	47.5	50.5	49.0	49.0	56.0	45.0		316	.....	381	.....
17	29.277	29.320	29.292	29.296	43.5	44.0	41.0	48.0	50.5	44.0	47.5	51.0	42.5		224	203	218	.....
18	29.186	29.143	29.091	29.140	37.5	59.5	55.5	41.0	63.0	56.5	53.5	65.5	41.0		179	461	421	.....
19	29.163	29.128	29.114	29.184	63.0	70.5	67.0	63.0	72.0	68.0	67.7	74.0	48.0		576	625	648	.....
20	29.185	29.016	29.037	29.079	70.0	85.0	78.0	72.0	87.5	80.5	80.0	90.5	64.0		706	162	924	.....
21	29.022	29.015	29.060	29.032	67.0	67.0	56.0	70.5	72.0	62.5	68.3	79.5	61.0		615	595	363	.....
22	29.102	29.095	29.190	29.129	59.5	63.5	61.5	69.5	74.5	68.5	70.8	86.5	60.0		360	449	432	.....
23	29.105	29.095	29.112	29.104	53.0	64.0	67.5	57.0	70.5	67.5	65.0	79.5	54.5		350	549	673	.....
24	29.009	29.011	29.075	29.032	72.5	78.5	64.0	77.5	99.5	68.0	81.7	100.5	65.5		723	629	543	.....
25	29.225	29.268	29.283	29.259	60.0	62.5	61.5	71.0	73.0	71.0	71.7	94.0	60.0		371	425	419	.....
26	29.092	29.067	29.120	29.093	70.0	70.5	61.5	76.0	72.5	62.0	70.2	78.0	60.5		652	712	729	.....
27	29.250	29.420	29.412	29.361	46.0	46.0	44.5	47.5	50.5	49.0	49.0	61.0	44.5		291	252	234	.....
28	29.434	29.388	29.316	29.379	51.0	56.5	52.5	59.5	69.5	61.5	63.5	69.5	38.5		262	244	270	.....
29	29.238	29.369	29.322	29.310	56.0	63.0	53.0	60.5	67.0	57.0	63.5	73.5	52.5		310	522	350	.....
30	29.321	29.264	29.295	29.293	61.5	66.0	61.0	70.0	86.0	60.0	75.0	86.5	51.5		432	371	430	.....
Means....	29.134	29.130	29.140	29.135	.....	.....	.....	56.7	69.8	57.9	61.5	.....	.....		379	427	397	.....

the northern and northwestern lakes, at Marquette, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.698	.703	.845	.749	NW	NW	NW	12	12	2	8.7	N. 45 W.	10	8	0		
.759		.788	.774	NW		W	2		2	1.3	N. 69 W.	0	0	0		
.314	.434	.523	.424	SW	W	NW	4	4	2	3.0	S. 83 W.	0	6	10		
.587	.597	.762	.649	NW	NW	NW	12	12	2	8.7	N. 45 W.	0	6	10		
.803	.756	.848	.836	NW	W	NW	4	4	2	3.0	N. 63 W.	10	2	0		
.781	.684	.797	.751	NW	NW	NW	4	4	2	3.3	N. 45 W.	8	1	0		
.684	.647	.699	.677	Calm	NW	Calm	0	4	0	1.3	N. 45 W.	0	4	4		
.569	.634	.847	.683	S	SE	S	4	2	4	2.7	E. 9 E.	0	8	0		
.534	.743	.738	.672	NW	SE	SE	4	4	2	0.7	S. 45 E.	0	0	0		
.443	.304	.388	.378	SW	S	W	12	12	2	7.7	S. 27 W.	0	1	0		
.723	.533	.553	.603	NW	E	S	4	2	25	7.3	S. 1 W.	2	3	0		
.705	.722	.669	.699	W	NW	NW	12	25	12	15.7	N. 55 W.	3	2	0		
.677	.511	.841	.676	NW	NW	NW	25	12	2	13.0	N. 45 W.	4	1	0		
.507	.557	.695	.586	NW	E	NW	2	2	4	1.7	N. 26 W.	0	0	8		
.595	.698	.617	.637	NW	Calm	NW	4	0	4	2.7	N. 45 W.	10	10	0		.62
.653	.624	.100	.459	E	E	Calm	4	2	0	2.0	East.	0	0	0		
.483	.666	.681	.610	S	SE	Calm	12	35	0	14.7	S. 34 E.	10	10	10		.08
.824	.704	.861	.796	N	SE	Calm	12	2	0	3.7	N. 9 E.	10	10	10		
.745	.328	.513	.529	SE	S	SW	12	45	4	19.0	S. 5 E.	0	0	6		
.549	.533	.712	.598	W	W	NW	25	35	25	26.3	N. 77 W.	3	2	4		.08
.602	.535	.649	.595	NW	NW	W	35	12	2	16.3	N. 47 W.	5	0	0		
.507	.479	.477	.488	E	SE	W	2	4	2	1.3	S. 45 E.	0	0	0		
.507	.483	.477	.489	NW	E	W	4	4	2	1.0	N. 15 W.	0	0	0		
.270	.427	.548	.415	W	SE	Calm	12	4	0	3.3	S. 74 W.	0	3	10		
.441	.465	.738	.548	W	E	Calm	4	2	0	0.7	West	0	0	0		
.624	.698	.907	.743	NW	NW	NW	12	12	4	9.3	N. 45 W.	0	5	0		
.874	.713	.719	.765	N	N	NW	12	12	25	15.0	N. 23 W.	8	8	8		
.645	.566	.645	.619	NW	NW	N	12	12	4	9.0	N. 39 W.	8	4	6		
.535	.502	.627	.555	W	SE	Calm	4	2	0	1.0	S. 62 W.	2	1	8		
.953	.522	.698	.724	N	NW	NW	25	35	2	19.3	N. 27 W.	10	0	0		
.515	.474	.618	.536	Calm	E	SE	0	4	4	2.3	S. 69 E.	0	0	10		
.619	.575	.663	.621							3.6	N. 63 W.	3.3	3.5	3.4		.78
.552	.589	.734	.624	W	S	Calm	25	2	0	8.7	S. 85 W.	7	2	0		.04
.663	.638	.623	.641	Calm	Calm	S	0	0	2	0.7	South	0	10	7		
.557	.421	.612	.550	Calm	E	Calm	0	2	0	0.7	East	7	1	7		
.582	.539	.582	.568	S	E	S	2	2	4	2.3	S. 17 E.	10	0	0		
.782	.784	.869	.812	SE	S	Calm	2	2	0	1.3	S. 21 E.	10	10	10		.21
1.000	.832	.884	.905	Calm	NW	NW	0	12	12	8.8	S. 45 W.	10	6	7		.54
.935	.869	1.000	.901	W	S	Calm	2	2	0	1.0	S. 45 W.	8	7	10		
.934	.946	.942	.941	Calm	SE	NE	35	12	1.3	12.3	S. 64 E.	10	6	6		.48
.641	.382	.847	.623	SW	W	W	12	12	4	8.7	S. 71 W.	1	2	0		
.494	.594	.735	.608	N	E	W	4	2	2	1.3	North	0	0	0		
.732	.802	.918	.817	W	SE	NE	4	25	4	7.3	S. 48 E.	8	9	10		.47
.926	.830	.742	.899	Calm	SE	Calm	0	4	0	1.3	S. 45 E.	0	6	10		.73
.966	.823	.803	.623	Calm	SE	SE	0	4	4	2.7	S. 45 E.	7	7	1		.63
.780	.577	.698	.608	W	W	NW	12	12	2	8.3	N. 87 W.	0	2	0		
.790	.906	.933	.817	W	Calm	NW	4	0	2	2.0	N. 77 W.	1	6	0		.34
.962		.817	.899	NW	W	W	12	2	4	5.7	N. 60 W.	9	0	0		.10
.666	.553	.756	.917	NW	NW	Calm	12	4	0	5.3	N. 45 W.	4	1	0		
.695	.803	.905	.801	W	W	W	12	25	2	13.0	West	0	0	0		
1.000	.924	.947	.958	Calm	Calm	S	0	0	4	1.3	South	0	0	0		
.900	.897	.889	.895	W	SE	S	2	45	4	15.3	S. 40 E.	2	4	4		.04
.824	.758	.641	.741	Calm	NW	W	6	12	2	4.7	N. 51 W.	1	4	0		
.501	.514	.650	.556	W	NW	W	2	4	4	3.0	N. 72 W.	0	0	6		
.752	.683	1.000	.812	Calm	E	SE	0	4	25	9.0	S. 51 E.	8	4	8		
.755	.365	.793	.638	SW	SW	NW	35	4	4	13.0	S. 51 W.	0	1	0		
.490	.524	.553	.522	Calm	Calm	Calm	0	0	0	0	Calm	0	0	0		
.727	.778	.970	.858	Calm	NW	NW	0	4	2	2.0	N. 45 W.	4	4	0		
.886	.683	.673	.747	NW	NW	NW	12	12	4	9.3	N. 45 W.	6	8	4		.78
.515	.395	.485	.465	Calm	W	W	0	12	12	8.0	West	1	1	0		
.477	.790	.752	.676	W	SW	W	4	4	2	1.3	S. 50 W.	0	0	0		
.590	.299	.607	.499	Calm	SW	SW	0	12	4	5.3	S. 45 W.	0	2	2		
.736	.657	.789	.731							2.0	S. 63 W.	3.8	3.4	3.1		.436



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.								VAPOR.						
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.					
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1865.					°	°	°	°	°	°	°	°	°						
July	1	29.185	29.218	29.326	29.243	59	59	53	66	64	59	63.0	70	60	407	433	323	383	383
	2	29.398	29.381	29.348	29.376	56	60	62	61	75	67	67.7	78	57	383	312	429	383	383
	3	29.268	29.278	29.338	29.295	60	66	67	70	74	70	71.3	79	61	385	532	622	500	500
	4	29.478	29.368	29.398	29.415	64	59	53	67	64	56	63.3	77	53	556	433	363	461	461
	5	29.454	29.438	29.366	29.419	52	61	60	54	65	63	60.7	71	52.5	362	483	472	441	441
	6	29.351	29.300	29.312	29.321	70	75	73	78	88	80	82.0	91	59	625	692	717	678	678
	7	29.455	29.463	29.415	29.444	60	61	58	65	70	62	65.7	83	61	451	416	429	429	429
	8	29.403	29.381	29.386	29.390	56	60	56	59	69	62	63.3	71	56	409	398	362	383	383
	9	29.469	29.471	29.459	29.466	54	56	53	58	60	57	58.3	66	57	365	396	350	377	377
	10	29.416	29.376	29.352	29.381	56	54	53	60	59	58	59.0	64	56	396	351	376	381	381
	11	29.369	29.338	29.303	29.337	54	57	60	62	72	61	65.0	77	52	312	266	515	361	361
	12	29.308	29.406	29.527	29.414	62	44	45	70	51	52	57.7	80	52	449	196	217	244	244
	13	29.632	29.627	29.584	29.614	46	49	49	51	58	52	53.7	80	45	245	229	342	290	290
	14	29.572	29.519	29.456	29.516	51	52	52	55	62	58	58.3	64	45	321	256	300	282	282
	15	29.369	29.329	29.324	29.341	51	54	51	57	52	56	58.3	66	56	295	312	302	305	305
	16	29.352	29.376	29.399	29.376	53	52	49	58	65	57	60.0	67	50	336	216	242	286	286
	17	29.462	29.414	29.371	29.416	51	58	53	60	70	67	64.0	75	48	255	323	340	304	304
	18	29.318	29.231	29.168	29.239	56	61	60	65	76	66	69.0	80	56	330	336	432	342	342
	19	29.027	29.015	29.112	29.051	59	65	60	65	76	69	70.0	81	60	420	470	392	429	429
	20	29.205	29.260	29.399	29.288	59	58	53	65	64	58	61.7	69	57	420	403	356	386	386
	21	29.377	29.386	29.527	29.429	53	54	52	56	56	55	55.7	59	55	363	391	349	386	386
	22	29.620	29.649	29.631	29.633	53	58	56	56	63	62	60.3	66	55	363	416	369	380	380
	23	29.606	29.572	29.478	29.552	60	60	55	65	67	59	63.7	71	55	451	425	320	412	412
	24	29.396	29.351	29.191	29.313	57.5	59	57	60	62	59	60.3	65	58	440	460	439	446	446
	25	29.033	29.243	29.321	29.199	58	61	61	63	72	66	67.0	76	59	416	390	470	425	425
	26	29.373	29.315	29.303	29.330	61	68	60	66	76	65	69.0	77	61	470	577	451	494	494
	27	29.208	29.215	29.288	29.237	61	65	62	64	80	70	71.3	82	62	497	417	449	451	451
	28	29.228	29.275	29.345	29.303	58	59	58	66	74	64	68.0	76	59	376	300	403	382	382
	29	29.531	29.566	29.579	29.559	51	58	48	57	60	53	56.7	67	52	205	456	272	340	340
	30	29.627	29.604	29.569	29.600	51	56	54	55	64	56	58.3	65	44	321	343	391	332	332
	31	29.619	29.566	29.543	29.576	54	52	59	57	69	64	63.3	73	51	378	462	433	424	424
Means....		29.392	29.385	29.391	29.389	....	....	....	61.6	67.3	61.2	63.4	....	....	390	390	396	392	392
August	1	29.526	29.508	29.490	29.508	64	64	60	67	74	68	69.7	75	60	556	462	411	476	476
	2	29.488	29.420	29.430	29.446	64	67	69	70	85	76	77.0	88	61	516	420	614	517	517
	3	29.502	29.543	29.568	29.538	64	58	57	69	68	62	66.3	71	67	529	350	399	426	426
	4	29.586	29.571	29.553	29.570	56	61	59	62	68	62	64.0	70	58	369	443	460	424	424
	5	29.551	29.461	29.308	29.440	55	63	65	61	70	68	66.3	73	53	354	422	577	471	471
	6	29.188	29.258	29.308	29.251	63	61	59	67	67	63	65.7	71	62	522	457	447	475	475
	7	29.358	22.338	29.333	29.340	58	50	63	63	78	69	70.0	80	55	416	....	495	458	458
	8	29.323	29.340	29.348	29.337	63	66	64.5	69	75	70	71.3	76	62	495	519	531	516	516
	9	29.290	29.148	29.128	29.189	67	69	68	71	72	72	71.7	77	66	608	662	631	636	636
	10	29.230	29.330	29.436	29.332	65	62	56	70	70	62	67.3	74	62	550	449	399	456	456
	11	29.487	29.474	29.446	29.470	58	53	51	63	61	55	59.7	63	56	416	297	321	345	345
	12	29.457	29.449	29.441	29.449	51	60	54	56	68	57	60.3	70	48	308	411	378	366	366
	13	29.444	29.438	29.421	29.434	55	61	54	59	69	59	62.3	72	49	360	430	351	387	387
	14	29.426	29.396	29.393	29.405	56	62	57	58	71	63	64.0	73	52	422	436	386	415	415
	15	29.396	29.451	29.441	29.429	62	59	55	68	69	61	66.0	73	60	476	367	354	389	389
	16	29.419	29.524	29.506	29.483	62	55	52	64	65	57	62.0	66	57	529	300	322	384	384
	17	29.536	29.484	29.458	29.493	52	60	57	56	70	61	62.3	72	47	335	335	412	377	377
	18	29.471	29.398	29.403	29.424	67	68	55	70	80	72	74.0	83	54	622	524	340	495	495
	19	29.413	29.328	29.295	29.345	62	68	52	66	76	68	70.0	80	62	502	577	177	419	419
	20	29.350	29.185	29.160	29.232	64	79	68	68	90	73	77.0	84	67	543	841	612	667	667
	21	29.245	29.250	29.256	29.250	60	57	57	65	65	61	63.7	75	59	451	329	412	407	407
	22	29.352																	

: northern and northwestern lakes, at Milwaukee, Wisconsin.

VAPOR.				WIND.										Amount of cloudiness. (0 = clear sky) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and deci- mals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity, Saturation = 1,000.				Direction, From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.							
7 a. m.	9 a. m.	11 a. m.	Mean.	7 a. m.	9 a. m.	11 a. m.	7 a. m.	9 a. m.	11 a. m.			7 a. m.	9 a. m.	11 a. m.				
636	727	647	670	W	NW	N	1.6	2.5	0.4	3.5	N. 50 W.	1	5	0	235	38		
713	367	740	607	NW	W	Calm	1.0	0.4	0.0	0.7	N. 45 W.	0	0	5	145			
325	634	848	689	SW	S. SE	Calm	0.2	0.2	0.0	0	Calm	0	5	5	185	14		
841	797	809	793	E. NE	NE	N. NE	0.5	1.2	2.1	3.3	N. 40 W.	10	10	10	155	65		
267	783	831	827	NE	E	Calm	1.0	0.9	0.0	1.3	N. 68 E.	10	9	0	980			
653	523	701	626	N. SW	W. NW	Calm	1.0	2.0	0.0	2.0	N. 62 W.	0	5	0	145			
730	570	772	691	NE	E. NE	Calm	1.0	1.0	0.0	1.3	N. 57 E.	10	8	10	285	42		
819	564	663	643	NE	NE	Calm	0.2	1.5	0.0	1.3	N. 45 E.	10	5	4	255			
756	785	732	758	NE	NE	NE	1.5	2.2	0.0	3.1	N. 45 E.	10	10	10	185	04		
765	703	698	722	E. NE	NE	Calm	0.3	3.0	0.0	4.0	N. 45 E.	9	10	10	015			
561	340	941	614	N. NW	S. SE	Calm	0.2	0.2	0.0	0	Calm	0	0	5	050			
613	523	535	558	NE	NE	NE	2.8	5.0	3.5	3.5	N. 45 E.	1	1	0	235			
653	475	794	641	E. NE	NE	Calm	1.5	0.0	0.0	1.0	N. 60 E.	1	0	0	200			
743	461	641	615	Calm	SE	Calm	0.0	1.5	0.0	1.3	S. 45 E.	0	5	10	175			
634	561	667	627	E	E	Calm	0.3	0.3	0.0	0	Calm	10	9	5	240			
608	331	521	527	NE	NE	N. NE	2.8	3.9	0.1	12.3	N. 45 E.	0	0	0	180			
493	441	612	515	Calm	S. SE	Calm	0.0	0.6	0.0	3.7	S. 21 E.	0	5	0	210			
535	375	625	532	N. NW	W. NW	Calm	0.1	1.0	0.0	0.7	S. 69 W.	0	3	5	260			
620	524	561	589	Calm	S. SE	Calm	0.0	1.7	0.0	1.3	S. 22 E.	5	2	0	315			
680	675	608	644	Calm	NE	NE	0.0	0.9	2.5	4.7	N. 45 E.	0	8	10	270			
804	772	805	829	NE	NE	N. NE	4.0	5.3	3.9	28.3	N. 38 E.	10	10	10	110	65		
809	721	665	722	NE	E. NE	Calm	1.2	0.1	0.0	1.7	N. 45 E.	10	10	10	000			
731	642	761	711	Calm	S. SE	Calm	0.0	0.4	0.0	0	Calm	1	9	9	110	02		
851	638	778	832	Calm	Calm	Calm	0.0	0.0	0.0	0	Calm	10	10	10	035	14		
723	497	736	632	W. NW	NW	Calm	3.2	3.1	0.0	8.0	N. 56 W.	1	5	0	070			
735	644	731	701	SW	SE	SW	1.0	3.0	3.0	8.7	S. 4 W.	8	8	0	215			
833	407	613	618	SE	W	SW	1.0	4.0	3.0	11.3	S. 73 E.	10	3	5	105			
588	338	675	540	NW	W	Calm	2.0	1.3	0.0	1.9	N. 60 W.	1	9	5	305			
634	620	667	727	NE	E. NE	Calm	2.1	1.2	0.0	1.9	N. 53 E.	1	0	0	255			
743	575	672	730	NE	Calm	Calm	0.1	0.0	1.0	0	Calm	0	0	10	140			
812	653	727	731	Calm	SE	Calm	0.0	1.2	0.0	0.7	S. 45 E.	0	0	0	150			
705	586	718	670	NE	NE	NE	3.0	3.0	3.0	3.0	N. 29 E.	4.2	5.3	4.8	5.185	1.78		
841	551	601	604	NE	NE	NE	1.5	0.0	0.0	0.7	N. 65 E.	10	2	0	235			
704	349	645	579	NE	NE	NE	1.5	0.0	0.0	0.7	N. 65 E.	10	5	9	210	02		
747	511	718	628	N. NE	Calm	Calm	1.5	0.0	0.0	0.7	N. 65 E.	10	10	9	250	08		
665	647	628	713	E	SE	Calm	1.2	2.4	0.0	0	Calm	8	0	5	055			
659	658	643	720	Calm	SE	SW	0.0	0.9	0.9	0	Calm	0	9	8	280	26		
790	690	776	752	NW	NE	Calm	3.4	3.0	0.0	0.7	N. 65 W.	10	10	5	020			
723	700	700	712	Calm	W	W. SW	0.0	3.0	0.0	0.7	West	0	2	10	050			
710	589	727	675	Calm	SE	Calm	0.0	3.0	0.0	0.7	S. 25 E.	10	0	1	215			
802	452	804	619	SW	S. SW	W	0.6	7.5	0.3	1.3	South	10	10	8	165	28		
751	613	665	676	N. NE	NE	NE	0.3	7.6	4.5	2.0	N. 53 E.	0	0	6	000			
723	553	743	673	NE	NE	Calm	0.6	5.2	0.0	4.0	N. 45 E.	10	1	1	170			
687	601	612	700	Calm	S. SE	Calm	0.0	0.3	0.0	0.7	S. 65 E.	0	0	0	130			
761	607	703	690	Calm	S. SE	Calm	0.0	3.6	0.0	1.3	S. 45 E.	0	0	0	135			
676	576	670	707	Calm	SE	Calm	0.0	3.0	0.0	0.7	S. 65 E.	0	0	0	145			
695	518	659	624	N. NW	NE	NE	4.5	7.5	6.0	3.0	N. 36 E.	0	0	0	150			
804	487	604	689	NE	NE	Calm	10.8	0.0	0.0	8.3	N. 45 E.	0	0	0	407			
747	525	769	620	Calm	S. SE	Calm	0.0	3.3	0.0	1.3	S. 45 E.	0	0	0				
848	512	612	657	NW	W	W	2.4	3.0	0.3	0.7	S. 65 W.	3	9	9				
726	644	258	563	Calm	S. SE	N. NW	0.0	0.3	0.3	0	Calm	5	10	8	737	10		
713	597	761	717	S. SW	W	Calm	0.3	4.6	0.0	1.3	S. 45 W.	9	10	0				
731	582	769	694	N. NW	N. NW	NW	6.2	6.3	6.0	19.0	N. 49 E.	10	10	10	160	36		
562	402	577	524	N. NW	N. NW	E	7.2	15.0	4.5	17.0	N. 45 E.	5	0	0	020			
738	561	733	677	W	W	Calm	0.3	4.5	0.0	1.3	East	0	0	0	141			
738	467	756	634	W	S	W	0.3	7.5	0.3	4.0	S. 23 E.	0	0	0	139			
713	433	620	605	W	W	Calm	0.3	6.9	0.0	1.3	S. 68 E.	0	0	0	150			
727	518	672	639	W. SW	W	W	3.6	4.2	3.0	2.6	S. 84 W.	0	1	0				
583	417	819	580	NE	N	N	6.0	5.1	3.0	3.7	N. 30 E.	2	7	10	570	08		
776	712	843	777	E	S. SW	W	7.5	7.6	0.3	3.7	S. 3 W.	10	1	9	000	1.32		
838	799	516	718	Calm	S. SE	Calm	0.0	1.6	0.0	0.7	S. 45 E.	1	0	6				
796	535	807	713	Calm	W	Calm	0.0	5.1	0.0	1.3	S. 68 W.	0	0	0	085			
751	518	768	679	Calm	S. SW	W	0.0	2.4	0.3	0.7	S. 45 W.	0	0	5	165			
										1.7	N. 57 E.	3.6	3.1	4.3	4.794	4.34		

Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
Sept. 1	29.405	29.332	29.320	29.352	65	70	69	69	78	72	73.0	81	65	564	706	688	684	
2	29.250	29.192	29.197	29.213	67	69	68	70	73	71	71.3	77	66	622	655	644	640	
3	29.235	29.227	29.257	29.240	69	74	71	72	83	77	77.3	88	69	668	714	678	684	
4	29.277	29.287	29.390	29.318	70	71	69	74	84	76	78.0	85	64	679	723	614	626	
5	29.405	29.345	29.315	29.355	55	65	62	61	72	66	66.7	75	67	354	524	502	474	
6	29.326	29.283	29.273	29.296	57	66	61	61	80	67	69.3	82	56	412	452	457	444	
7	29.268	29.190	29.067	29.175	61	65	63	65	69	68	67.3	72	62	483	564	509	514	
8	28.957	29.115	29.235	29.102	67	65	61	70	72	65	69.0	74	65	622	524	483	514	
9	29.361	29.358	29.340	29.353	60	65	65	74	71	68	71.0	73	63	331	537	517	474	
10	29.235	29.132	29.283	29.217	73	75	59	79	81	65	75.0	83	65	730	787	431	544	
11	29.343	29.331	29.343	29.339	53	62	57	59	75	62	65.3	77	56	323	382	329	324	
12	29.353	29.325	29.350	29.343	63	68	67	67	73	71	70.3	76	61	522	618	628	584	
13	29.330	29.455	29.425	29.403	68	68	67	71	72	70	71.0	84	69	644	621	622	624	
14	29.438	29.447	29.563	29.483	69	73	60	72	84	67	74.3	86	66	668	623	425	564	
15	29.638	29.631	29.588	29.619	59	60	63	65	68	68	67.0	70	61	420	411	549	474	
16	29.508	29.418	29.365	29.430	67	74	71	70	83	76	76.3	85	65	622	718	621	614	
17	29.408	29.446	29.539	29.464	63	57	53	66	60	58	61.3	65	58	536	426	336	434	
18	29.607	29.644	29.624	29.625	53	51	49	59	60	52	57.0	61	52	323	255	318	264	
19	29.650	29.602	29.566	29.606	47	60	53	51	67	56	58.0	68	42	270	425	363	324	
20	29.519	29.454	29.416	29.463	50	61	60	52	72	64	62.7	75	52	334	390	465	394	
21	29.481	29.423	29.448	29.451	55	65	63	58	76	67	67.0	78	55	333	470	522	464	
22	29.511	29.465	29.510	29.495	62	69	65	66	76	69	70.3	78	63	502	614	564	584	
23	29.543	29.588	29.485	29.539	64	73	67	68	75	72	71.7	82	67	543	784	525	644	
24	29.428	29.335	29.357	29.373	67	70	68	72	80	73	75.0	81	69	595	598	618	604	
25	29.485	29.501	29.511	29.499	56	59	54	60	66	57	61.0	75	57	396	407	372	384	
26	29.544	29.516	29.533	29.531	54	63	62	56	70	65	63.7	73	54	391	422	516	424	
27	29.566	29.525	29.538	29.543	62	65	63	67	71	68	68.7	74	64	489	537	549	514	
28	29.498	29.458	29.428	29.461	63	70	66	67	79	70	72.0	82	64	522	612	566	574	
29	29.330	29.388	29.463	29.394	63	54	52	68	67	56	63.7	74	55	509	245	335	364	
30	29.436	29.331	29.336	29.368	47	54	48	52	62	58	57.3	68	48	257	312	303	284	
Means....	29.411	29.392	29.402	29.402	.....	.....	.....	65.4	73.3	66.4	68.4	.....	.....	489	534	503	514	
Oct. 1	29.254	29.222	29.252	29.243	47	53	46	51	66	52	56.3	67	43	270	231	222	244	
2	29.457	29.352	29.518	29.442	37	45	43	43	58	46	49.0	59	41	142	129	228	174	
3	29.463	29.415	29.445	29.441	38	50	41	41	55	44	46.7	53	40	190	295	217	234	
4	29.538	29.503	29.517	29.519	36	47	40	40	56	44	46.7	57	39	160	204	195	176	
5	29.565	29.572	29.575	29.571	38	49	44	41	59	46	48.7	60	38	190	216	262	223	
6	29.590	29.467	29.439	29.499	49	59	56	53	67	60	60.0	69	46	295	323	286	304	
7	29.394	29.376	29.441	29.404	59	63	54	64	74	59	65.7	76	59	433	429	351	414	
8	29.446	29.394	29.314	29.385	49	54	53	52	61	56	56.3	63	51	308	325	363	324	
9	29.296	29.263	29.313	29.291	56	61	57	60	76	62	66.0	77	56	396	316	346	377	
10	29.398	29.381	29.408	29.396	53	62	58	55	74	61	63.3	76	55	376	396	443	405	
11	29.413	29.356	29.361	29.377	49	60	54	52	72	58	62.7	74	51	302	358	265	344	
12	29.479	29.454	29.467	29.467	51	50	47	55	56	54	55.0	61	54	321	292	217	274	
13	29.427	29.350	29.310	29.362	46	48	44	51	54	48	51.0	55	48	245	256	235	246	
14	29.203	29.141	29.197	29.180	39	49	46	42	57	51	50.0	60	41	199	242	245	224	
15	29.356	29.413	29.493	29.421	34	40	35	39	49	39	42.3	52	38	131	139	152	137	
16	29.523	29.455	29.405	29.461	35	44	38	38	55	42	45.0	56	42	165	144	177	162	
17	29.233	29.014	28.971	29.073	41	48	43	46	52	47	46.3	54	41	192	292	225	233	
18	28.978	29.024	29.056	29.019	42	47	45	44	49	47	46.7	51	42	241	297	273	276	
19	28.929	28.926	28.006	28.954	38	46	40	41	58	49	49.3	59	40	190	153	130	152	
20	29.182	29.179	29.278	29.213	35	44	39	41	56	43	46.7	58	39	126	131	126	142	
21	29.486	29.503	29.523	29.504	32	40	34	37	49	38	41.3	50	35	116	130	144	130	
22	29.506	29.398	29.445	29.450	36	47.5	44	39	54.5	47	46.8	56	34	173	237	249	229	
23	29.573	29.603	29.673	29.618	41	40	40	47	46	45	46.0	50	44	179	169	192	177	
24	29.701	29.653	29.608	29.654	39	40	40	42	45	47	44.7	48	43	199	182	156	174	
25	29.503	29.420	29.408	29.445	43	45	44	45	48	48	47.0	49	45	251	260	236	249	
26	29.386	29.408	29.456	29.417	42	41	39	45	41	42	43.7	50	42	228	218	199	215	
27	29.378	29.249	29.200	29.276	38	38	35	41	41	37	39.7	44	37	190	190	172	186	
28	29.282	29.420	29.537	29.413	30	32	29	30	35	33	32.7	39	30	167	142	114	141	
29	29.597	29.599	29.682	29.626	24	33	28	26	39	32	32.3	40	25	106	110	102	106	
30	29.639	29.534	29.521	29.565	27	36	32	30	41	34	35.0	43	28	113	147	155	138	
31	29.499	29.536	29.556	29.530	32	33	32	34	38	35	35.7	41	34	155	123	142	140	
Means....	29.409	29.373	29.399	29.394	.....	.....	.....	44.0	54.3	46.6	48.3	.....	.....	218	230	231	226	

the northern and northwestern lakes, at Milwaukee, Wisconsin.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
.796	.900	.852	.849	Calm...	SE.....	Calm...	0	2	0	0.7	S. 65 E.	0	1	0	.175	.....
.848	.807	.850	.835	Calm...	E.....	Calm...	0	2	0	0.7	E.....	10	10	10	} .190	.....
.852	.636	.731	.740	Calm...	S. SE...	S. SW...	0	4	2	1.7	S. 7 E.	0	3	1		.....
.810	.501	.685	.665	Calm...	W. NW...	NW.....	0	4	2	2.0	N. 61 W.	1	8	2		.....
.659	.668	.786	.704	Calm...	Calm...	Calm...	0	0	0	0	Calm...	3	10	7	.207	.....
.769	.441	.690	.633	Calm...	SW.....	Calm...	0	4	0	1.3	S. 45 W.	0	3	3	.045	.....
.783	.796	.743	.774	Calm...	E. SE...	E. SE...	0	2	4	2.0	S. 67 E.	5	10	10	.065	2.66
.848	.668	.783	.766	W.....	W. NW...	Calm...	2	25	0	9.0	N. 69 W.	10	10	0	.000	.....
.395	.708	.843	.649	Calm...	SE.....	Calm...	0	4	0	1.3	S. 45 E.	10	8	10	.105	.....
.738	.744	.680	.721	SW.....	SW.....	Calm...	2	12	0	4.7	S. 79 W.	5	8	1	.075	.68
.647	.441	.718	.602	W. NW...	W. SW...	Calm...	1	2	0	0.7	S. 79 W.	0	0	0	.035	.....
.790	.761	.802	.784	Calm...	S. SE...	Calm...	0	4	0	1.3	S. 22 E.	10	9	3	} .140	} .36
.850	.804	.848	.834	Calm...	NE.....	Calm...	0	2	0	0.7	N. 45 E.	1	10	10		
.852	.569	.642	.688	SW.....	NW.....	NE.....	2	2	4	0.9	N.....	5	8	10		
.680	.601	.743	.675	E. NE...	E. NE...	Calm...	4	2	0	2.0	N. 67 E.	0	0	10	.120	.....
.848	.636	.771	.752	S. SW...	SW.....	Calm...	2	4	0	2.0	S. 38 W.	10	5	0	} .230	.90
.838	.882	.698	.806	Calm...	NE.....	N. NE...	0	35	12	15.3	N. 40 E.	10	10	10		
.647	.493	.794	.645	N.....	NE.....	Calm...	2	25	0	8.7	N. 41 E.	10	0	0		
.722	.642	.809	.724	Calm...	S. SE...	Calm...	0	4	0	1.3	S. 22 E.	0	3	0	} .167	.....
.861	.497	.780	.713	Calm...	S. SW...	Calm...	0	2	0	0.7	S. 25 W.	1	9	5		.....
.816	.524	.790	.710	Calm...	W. SW...	Calm...	0	4	0	1.3	S. 68 W.	5	3	0		} .180
.786	.685	.796	.756	Calm...	S. SE...	Calm...	0	2	0	0.7	S. 25 E.	8	3	0	.....	
.793	.904	.758	.818	SW.....	Calm...	Calm...	2	0	0	0.7	S. 45 W.	3	9	10	.075	
.758	.585	.761	.701	Calm...	W.....	Calm...	0	4	0	1.3	W.....	7	5	3	.085	.05
.765	.636	.812	.738	Calm...	E. NE...	Calm...	0	4	0	1.3	N. 68 E.	0	2	0	.090	.....
.872	.658	.836	.789	Calm...	SE.....	Calm...	0	4	0	1.3	S. 45 E.	1	8	9	.045	.....
.740	.708	.743	.730	S. SE...	SE.....	S. SE...	2	12	2	5.3	S. 39 E.	8	2	9	} .215	.02
.790	.618	.799	.736	Calm...	SW.....	S. SW...	0	4	4	2.7	S. 33 W.	0	3	0		
.743	.371	.747	.620	W.....	W. NW...	Calm...	25	25	0	16.3	N. 79 W.	9	10	0		
.660	.561	.421	.547	Calm...	W. NW...	Calm...	0	35	0	11.7	N. 67 W.	0	0	0	.150	.....
.765	.648	.757	.723	.....	.....	.....	.....	.....	.....	0.7	N. 59 W.	4.4	5.7	4.1	2.569	4.67
.722	.361	.598	.560	Calm...	Calm...	Calm...	0	0	0	0	Calm...	0	0	0	.....	.....
.511	.267	.767	.515	Calm...	Calm...	Calm...	0	0	0	.....	Calm...	0	0	3	.....	.....
.738	.681	.756	.725	Calm...	NE.....	Calm...	0	2	0	.....	Calm...	0	0	1	.....	.....
.645	.455	.677	.592	Calm...	Calm...	Calm...	0	0	0	0.7	N. 45 E.	0	0	0	.....	.....
.738	.432	.843	.671	Calm...	Calm...	Calm...	0	0	0	0	Calm...	0	0	0	.....	.....
.733	.595	.765	.698	SW.....	W. SW...	W. SW...	2	12	4	0	Calm...	9	3	9	.....	.....
.727	.511	.703	.647	W.....	N. NW...	NE.....	4	4	4	6.0	S. 65 W.	5	3	10	.....	.....
.794	.606	.809	.736	Calm...	SE.....	Calm...	0	2	0	2.0	N. 47 W.	5	0	0	.....	.....
.765	.375	.718	.619	W.....	W. SW...	Calm...	2	12	0	0.7	S. 45 E.	0	0	0	.....	.....
.869	.472	.825	.722	Calm...	SW.....	Calm...	0	4	0	4.7	S. 71 W.	0	0	0	.....	.....
.794	.457	.756	.669	Calm...	W.....	Calm...	0	2	0	1.3	S. 45 W.	0	0	0	.....	.....
.743	.627	.552	.641	NE.....	NE.....	E. SE...	12	12	2	0.7	W.....	10	10	5	.....	.....
.653	.613	.704	.657	W.....	E. NE...	Calm...	2	2	0	8.3	S. 28 E.	10	10	3	.....	.....
.744	.521	.653	.639	Calm...	Calm...	N. NE...	0	0	2	0.7	N. 25 E.	0	3	3	.....	.02
.547	.373	.636	.519	N.....	NE.....	Calm...	2	25	0	8.7	N. 45 E.	0	3	0	.....	.....
.719	.333	.661	.571	Calm...	W. NW...	Calm...	0	4	0	1.3	N. 67 W.	0	3	0	.....	.....
.617	.727	.698	.681	Calm...	.....	Calm...	0	.....	0	0	Calm...	10	10	10	.....	.....
.836	.853	.847	.845	Calm...	Calm...	Calm...	0	0	0	0	Calm...	10	10	10	.....	.32
.738	.318	.373	.476	Calm...	N. NW...	NW.....	0	35	2	12.0	N. 23 W.	5	0	0	.....	.32
.488	.292	.669	.483	W. NW...	W. NW...	Calm...	2	35	0	12.3	N. 67 W.	0	0	0	.....	.....
.527	.373	.628	.509	Calm...	Calm...	Calm...	0	0	0	0	Calm...	5	1	2	.....	.....
.726	.556	.772	.691	Calm...	Calm...	E. NE...	0	0	4	1.3	N. 86 E.	10	5	10	.....	.25
.554	.543	.607	.568	E. NE...	E. NE...	NE.....	4	4	12	6.3	N. 53 E.	10	10	10	.....	.....
.744	.607	.483	.611	E.....	E. NE...	E. SE...	2	4	4	3.1	E.....	10	10	10	.....	.68
.810	.777	.704	.774	SE.....	E. SE...	E.....	2	2	4	2.7	S. 75 E.	10	10	10	.....	.84
.762	.756	.744	.754	E. NE...	E. NE...	E. NE...	12	4	12	9.3	N. 67 E.	10	10	10	.....	.54
.738	.730	.807	.758	E. NE...	E. NE...	NE.....	35	12	35	27.0	N. 58 E.	10	10	10	.....	.....
1.000	.698	.606	.768	N.....	N. NW...	NW.....	25	4	4	10.7	N. 8 W.	10	10	10	.....	1.16
.754	.463	.594	.604	W. NW...	W. NW...	Calm...	4	12	0	5.3	N. 68 W.	0	0	0	.....	.....
.675	.567	.792	.678	Calm...	W.....	Calm...	0	2	0	0.7	W.....	10	9	7	.....	.....
.792	.537	.698	.676	.....	.....	.....	.....	.....	.....	.....	.....	10	10	5	.....	.....
.717	.531	.692	.647	.....	.....	.....	.....	.....	.....	2.0	N. 17 E.	5.1	4.5	4.4	.....	4.13



Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
Nov.	1	29.439	29.107	29.169	29.238	34	44	40	37	46	44	42.3	48	34	157.	262.	195.	205.
	2	29.328	29.448	29.506	29.447	35	37	36	38	43	40	40.3	45	37	165.	142.	160.	156.
	3	29.441	29.233	29.147	19.274	30	41	40	32	48	45	41.7	49	32	144.	166.	122.	162.
	4	29.226	29.279	29.437	29.314	30	30	30	35	34	31	33.3	46	31	109.	121.	155.	123.
	5	29.623	29.605	29.430	29.553	25	30	30	27	36	33	32.0	37	26	112.	098.	132.	114.
	6	29.162	29.404	29.621	29.396	30	35	30	36	44	34	38.0	46	33	098.	087.	121.	102.
	7	39.699	29.614	29.514	29.609	24	37	34	27	46	40	37.7	47	26	095.	103.	112.	105.
	8	29.396	29.381	29.556	29.444	33	43	33	37	52	41	43.3	54	36	136.	160.	027.	127.
	9	29.774	29.801	29.863	29.813	27	36	32	31	42	39	37.3	44	31	101.	134.	090.	102.
	10	29.943	29.913	29.913	29.923	33	35	36	37	40	42	39.7	42	37	136.	139.	134.	136.
	11	29.915	29.845	29.811	29.857	33	38	32	36	43	35	38.0	44	56	149.	164.	142.	152.
	12	29.768	29.670	29.606	29.681	29.5	46	36	33	53	42	42.7	55	30	123.	219.	134.	153.
	13	29.539	29.361	29.308	29.401	36	48	43	40	60	47	49.0	61	38	160.	177.	225.	187.
	14	29.220	29.134	29.126	19.160	39	48	45	42	58	48	49.3	60	42	199.	203.	160.	221.
	15	29.190	29.177	29.163	29.177	45	51	46	48	58	50	52.0	60	46	260.	282.	253.	267.
	16	29.106	28.683	28.953	29.014	45	51	54	48	55	59	54.0	59	46	260.	321.	351.	311.
	17	29.315	29.451	29.530	29.432	37	42	32	43	45	46	44.7	46	37	142.	228.	....	185.
	18	29.503	29.428	29.401	29.444	30	41	39	33	48	43	41.3	50	32	132.	166.	126.	162.
	19	29.451	29.396	29.358	29.401	32	43	37	36	52	44	44.0	54	35	129.	160.	129.	139.
	20	29.356	29.423	29.366	29.382	32	36	32	36	45	37	39.3	46	36	129.	095.	116.	113.
	21	29.438	29.313	29.316	29.356	33	36	37	37	42	41	40.0	45	36	136.	134.	168.	146.
	22	29.298	29.226	29.308	19.277	33	39	33	36	47	35	39.3	48	36	149.	134.	162.	142.
	23	29.394	29.420	29.431	29.415	34	38	32	37	44	34	38.3	45	33	157.	151.	155.	154.
	24	29.421	29.296	29.341	29.353	32	43	37	34	48	41	41.0	52	32	155.	212.	162.	172.
	25	29.495	29.508	29.556	29.220	31	37	31	35	45	35	38.3	46	32	128.	116.	132.	124.
	26	29.600	29.538	29.530	29.556	26	36	32.5	30	44	38	37.3	46	30	095.	108.	114.	106.
	27	29.636	29.634	29.596	29.622	26	32	28	28	40	31	33.0	41	27	117.	077.	119.	104.
	28	29.451	.....	29.330	29.390	33	....	33	38	....	37	37.5	40	29	123	....	136.	122.
	29	29.260	29.129	28.929	29.106	33	35	34	36	39	37	37.3	42	35	149.	152.	157.	153.
	30	28.691	28.687	28.752	28.710	33	27	25	37	33	28	32.7	45	27	136.	078.	100.	105.
Means....		29.438	29.393	29.395	29.409	....	....	....	35.7	45.9	39.9	40.5	....	....	143.	156.	154.	152.
			*							*					*	*		
Dec.	1	29.007	28.997	24.881	28.962	20	29	30	23	34	37	31.3	39	22	074.	103.	066.	082.
	2	29.762	28.808	29.026	28.865	31	34	34	34	39	37	36.7	42	34	139.	131.	157.	142.
	3	29.309	29.216	29.134	29.220	32	37	37	35	39	41	38.3	43	33	142.	194.	126.	174.
	4	29.446	29.644	29.807	29.632	34	29	31	36	32	34	34.0	42	24	170.	126.	139.	145.
	5	29.870	29.777	29.707	29.785	15	29	20	17	33	24	24.7	33	17	068.	114.	062.	074.
	6	29.547	29.325	29.242	29.371	18	30	29	20	34	32	28.7	37	18	076.	121.	126.	102.
	7	29.418	29.570	29.688	29.559	18	25	16	25	29	20	24.7	33	20	019.	029.	044.	051.
	8	29.088	29.632	29.545	29.622	14	30	21	17	33	25	25.0	35	16	048.	132.	067.	082.
	9	29.302	29.184	29.187	29.224	23	27	30	26	33	32	30.2	34	24	089.	078.	144.	104.
	10	29.027	28.979	29.042	29.016	40	37	33	43	42	36	40.3	44	31	202.	155.	149.	171.
	11	29.026	28.944	28.814	28.928	35	39	40	38	43	43	41.3	46	35	165.	186.	208.	126.
	12	28.934	29.215	29.600	29.250	20	11	3	23	15	5	14.3	45	5	074.	026.	027.	042.
	13	29.841	29.835	29.872	29.849	-3	2	-6	-1	5	-4	0.0	9	-4	015.	014.	010.	013.
	14	29.883	29.871	29.833	29.862	-8	2	-3	-7	5	-1	-1.0	6	-8	018.	014.	015.	016.
	15	29.788	29.663	29.587	29.679	-9	4	5	-8	7	7	2.0	9	-9	017.	018.	032.	021.
	16	29.799	29.234	29.213	29.282	7	16	16	9	20	20	16.3	23	7	037.	044.	044.	042.
	17	29.293	29.348	29.423	29.355	17	24	23	20	31	27	26.0	32	18	060.	049.	073.	082.
	18	29.343	29.178	29.070	29.197	25	30	30	28	33	32	41.0	36	25	100.	132.	144.	125.
	19	29.102	29.340	29.505	29.316	25	13	5	27	17	8	17.3	35	8	112.	033.	021.	053.
	20	29.434	29.132	29.143	29.236	4	11	4	6	12	6	8.0	16	3	030.	061.	030.	040.
	21	29.470	29.570	29.607	29.549	-8	2	-3	-7	4	-2	1.7	5	-7	018.	025.	023.	023.
	22	29.112	29.865	29.910	29.629	-5	0	-7	-4	2	-5	-2.3	7	-7	023.	021.	019.	018.
	23	29.827	29.495	29.174	29.499	-3	14	21	-2	16	24	12.7	25	-7	026.	059.	072.	055.
	24	28.936	28.738	28.825	28.833	21	30	30	23	35	33	30.3	36	21	090.	109.	132.	110.
	25	29.050	29.137	29.152	29.113	30	35	32	35	41	35	37.0	44	32	109.	126.	142.	126.
	26	29.134	29.164	29.157	29.152	28	34	31	31	38	35	34.7	39	31	119.	144.	122.	130.
	27	29.347	29.434	29.509	29.430	20	33	27	23	38	30	30.3	38	22	070.	123.	113.	103.
	28	29.522	29.589	29.724	29.612	20	19	15	23	24	18	21.7	34	18	074.	046.	052.	057.
	29	29.773	29.678	29.570	29.674	6	20	20	8	24	23	18.3	27	7	034.	062.	074.	057.
	30	29.478	29.395	29.335	29.403													

\* Mean of 29 observations.

the northern and northwestern lakes, at Milwaukee, Wisconsin.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear. sky.) (10 = sky en- tirely over- cast.)			Am't of evaporation, in U. S. inches and deci- mals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity. in miles per hour.	Resultant velocity.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.712	.843	.677	.744	Calm...			0			0	Calm	10	10	5		.30
.719	.511	.645	.625			W			2	0.7	W	10	8	8		
.794	.494	.607	.632	SW	SW	SW	2	25	12	13.0	S. 45 W.	0	2	9		
.537	.617	.893	.682	W. NW	NW	N. NW	4	25	25	17.7	N. 48 W.	10	10	0		
.761	.462	.703	.642	N. NW	W. NW	W	2	12	25	12.3	N. 80 W.	0	5	0		
.462	.299	.617	.450	W. NW	N. NW	Calm	12	25	0	11.3	N. 37 W.	0	7	0		
.644	.330	.476	.483	Calm	S. SW	S. SW	0	12	4	5.3	S. 22 W.	0	0	0		
.619	.411	.328	.453	W. SW	W. NW	NW	2	4	2	2.3	N. 72 W.	0	0	0		
.582	.500	.379	.487	W. NW	W. NW	W. NW	2	2	2	2.0	N. 55 W.	0	8	3		
.619	.557	.500	.559	W. NW	E	SE	12	4	4	1.7	N. 69 W.	9	10	0		
.705	.587	.698	.663	Calm	S. SE	Calm	0	4	0	1.3	S. 22 E.	2	0	0		
.654	.544	.500	.566	Calm	W	Calm	0	4	0	1.3	W	0	0	0		
.645	.342	.698	.562	Calm	W. SW	Calm	0	4	0	1.3	S. 68 W.	0	0	0		
.744	.421	.777	.647	W. SW	SW	SW	2	2	4	6.0	S. 50 W.	0	10	0		
.777	.584	.716	.692	W. SW	SW	S. SW	4	12	2	6.0	S. 49 W.	10	0	0		
.777	.743	.703	.741	S. SW	S. SW	SW	4	12	12	9.3	S. 32 W.	5	10	2		
.511	.762		.636	NW	NW	Calm	25	12	0	12.3	N. 45 W.	10	3	5		
.703	.494	.669	.622	Calm	S	S. SW	0	2	2	1.3	S. 11 W.	2	0	8		
.610	.411	.446	.489	S. SW	S. SW	SW	2	25	4	10.3	S. 26 W.	5	0	0		
.610	.314	.527	.484	W	W. NW	W. NW	2	12	2	5.3	N. 69 W.	0	0	0		
.619	.500	.653	.591	Calm	NE	N. NE	0	25	2	9.0	N. 44 E.	10	9	9		
.705	.413	.797	.638	W. NW	N. NW	Calm	2	12	0	4.3	N. 29 W.	5	0	0		
.712	.523	.792	.676	W. NW	W. NW	Calm	2	2	0	1.2	N. 45 W.	10	0	0		
.792	.631	.653	.692	Calm	S. SE	Calm	0	2	0	0.7	S. 23 E.	0	0	0		
.629	.386	.628	.547	Calm	W. NW	Calm	0	2	0	0.7	N. 23 W.	0	5	0		
.569	.372	.494	.478	Calm	W. NW	W. NW	0	4	4	2.7	N. 68 W.	0	0	0		
.768	.312	.685	.588	Calm	W. NW	Calm	0	2	0	0.7	N. 67 W.	0	0	0		
.537		.619	.578	S. SE	SE	E. SE	25	12	2	12.7	S. 31 E.	10	10	10		.01
.705	.636	.712	.684	Calm	S. SW	S. SW	0	4	12	5.3	S. 22 W.	10	10	10		
.619	.415	.655	.563	W	W. NW	W. NW	2	35	35	24.0	S. 68 W.	10	10	9		
.661	.498	.629	.597							2.1	N. 88 W.	4.1	4.4	2.6		0.31
.598	.524	.392	.505	W. NW	SW	W	4	2	4	3.0	N. 89 W.	0	10	9		.01
.712	.547	.712	.657	Calm	Calm	Calm	0	0	0	0	Calm	10	10	0		
.698	.816	.653	.722	Calm	NE	Calm	0	2	0	0.7	N. 45 E.	10	10	10		.08
.802	.694	.712	.736	W. NW	NW	Calm	2	4	0	2.0	N. 52 W.	10	10	0		
.671	.606	.483	.587	Calm	W. NW	Calm	0	2	0	0.7	N. 65 W.	0	0	0		
.702	.617	.694	.671	Calm	Calm	Calm	0	0	0	0	Calm	0	10	10		
.140	.556	.412	.369	N	N. NE	Calm	4	2	0	2.0	N. 8 E.	0	0	0		
.509	.703	.500	.571	Calm	SW	Calm	0	2	0	0.7	S. 45 W.	0	0	0		
.634	.415	.794	.614	Calm	W	W. SW	0	4	2	2.0	S. 82 W.	0	0	10		
.750	.577	.705	.677	SW	SW	Calm	2	4	0	2.0	S. 45 W.	10	9	2		
.719	.669	.750	.713	Calm	S. SE	S. SE	0	2	4	2.0	S. 23 E.	8	9	10		
.598	.304	.500	.467	W	W	W. NW	35	75	25	44.7	N. 86 W.	9	1	0		
.369	.253	.284	.302	W. NW	W. NW	W. NW	2	12	12	9.0	N. 67 W.	0	0	0		
.594	.253	.369	.405	W. NW	W. NW	W. NW	12	4	2	6.0	N. 68 W.	0	0	0		
.577	.308	.538	.474	Calm	Calm	Calm	0	0	0	0	Calm	0	0	9		
.568	.412	.412	.464	S. SW	S. SW	S. SW	2	2	2	5.3	S. 23 W.	10	10	10		
.556	.281	.529	.455	Calm	S. SW	Calm	0	2	0	0.7	S. 25 W.	9	10	0		
.655	.703	.794	.717	Calm	Calm	Calm	0	0	0	0	Calm	10	10	10		.11
.761	.350	.334	.482	W. NW	W. NW	NW	25	25	2	17.3	N. 67 W.	10	0	0		
.520	.804	.520	.615	N. NW	N	N	2	4	25	10.0	N. 2 W.	10	10	0		.28
.594	.480	.671	.582	W. NW	W. NW	Calm	12	4	0	5.3	N. 68 W.	0	0	0		
.645	.438	.257	.580	W. NW	W. NW	Calm	2	4	0	2.0	N. 67 W.	1	0	0		.04
.671	.659	.610	.647	Calm	S. SW	S. SW	0	2	2	1.3	S. 25 W.	10	8	10		
.730	.537	.703	.657	Calm	SW	W. SW	0	4	4	2.7	S. 57 W.	0	10	0		
.537	.488	.698	.574	W	S. SE	S	2	2	2	.3	S. 18 W.	10	5	8		
.685	.628	.628	.644	Calm	N. NE	N. NE	0	2	2	1.3	N. 23 E.	10	10	9		
.598	.537	.675	.603	Calm	SW	SW	0	2	2	1.3	S. 45 W.	0	0	3		
.598	.358	.525	.494	SW	W. NW	W	2	12	2	5.0	N. 77 W.	10	7	0		
.553	.483	.598	.545	Calm	S. SW	Calm	0	4	0	1.3	S. 22 W.	0	1	10		
.584	.622	.644	.617	Calm	S. SW	S. SW	0	2	0	1.3	S. 23 W.	10	0	4		
.782	.527	.712	.674	SW	W	W. NW	4	4	2	3.0	S. 77 W.	9	1	0		
.616	.524	.574	.571							6.5	N. 30 W.	5.3	4.2	4.0		.52



Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1866.					0	0	0	0	0	0	0	0	0					
Jan.	1	29.630	29.678	29.640	29.649	6	12	7	10	16	10	12.0	25	9	.012	.029	.025	.023
	2	29.513	29.345	29.345	29.401	8	22	21	10	27	24	20.3	28	6	.040	.061	.074	.062
	3	29.395	29.478	29.571	29.481	12	13	5	15	16	8	13.0	27	7	.041	.044	.021	.035
	4	29.679	29.778	29.823	29.760	-2	4	-1	0	7	1	2.7	10	-1	.017	.018	.019	.021
	5	29.797	29.770	29.773	29.780	-7	6	11	-5	10	14	6.3	15	-7	.009	.012	.037	.029
	6	29.581	29.603	29.859	29.681	11	24	20	14	27	24	21.7	31	12	.037	.095	.064	.088
	7	30.172	30.306	30.403	30.294	12	15	14	15	18	17	16.7	25	14	.041	.052	.047	.047
	8	30.503	30.462	30.462	30.476	14	17	15	16	21	17	18.0	25	15	.059	.049	.063	.057
	9	30.193	30.018	29.860	30.020	11	26	37	14	30	38	27.3	31	11	.037	.045	.207	1.13
	10	29.600	29.477	29.452	29.510	29	33	33	30	36	35	33.7	38	27	.149	.149	.162	.153
	11	29.387	29.282	29.165	29.278	32	34	34	34	36	36	35.3	38	33	.155	.170	.174	.167
	12	28.867	28.792	28.852	28.837	33	39	32	35	41	34	36.7	44	35	.162	.212	.155	.174
	13	29.205	29.360	29.578	29.381	20	20	11	22	24	13	19.7	39	13	.080	.042	.049	.063
	14	29.729	29.731	29.671	29.710	8	15	....	9	18	10	12.3	21	7	.051	.052	....	.051
	15	29.308	28.888	28.683	28.960	21	27	30	24	29	31	28.0	33	18	.079	.124	.155	.119
	16	29.135	29.311	29.400	29.282	10	14	10	12	18	12	14.0	32	11	.046	.037	.046	.043
	17	29.258	29.186	29.221	29.222	7	10	6	9	13	8	10.0	16	8	.037	.034	.034	.032
	18	29.201	29.194	29.139	29.178	1	12	....	3	16	18	12.3	19	1	.023	.029	....	.028
	19	29.068	29.036	29.995	29.366	18	25	13	20	29	15	21.3	30	8	.076	.049	.056	.074
	20	29.511	29.699	29.754	29.655	-11	-4	-8	-10	-2	-7	-6.3	17	-10	.014	.014	.018	.013
	21	29.760	39.637	29.597	29.665	-8	4	4	-7	7	6	2.0	9	-9	.018	.018	.014	.017
	22	29.585	29.601	29.636	29.607	-3	6	7	-1	9	10	6.0	12	-2	.015	.023	.026	.021
	23	29.631	29.589	29.611	29.610	6	18	20	8	21	24	17.7	25	7	.034	.065	.062	.054
	24	29.541	29.435	29.338	29.438	20	24	19	23	27	22	24.0	30	22	.074	.095	.069	.079
	25	29.305	29.298	29.332	29.278	19	26	20	21	31	23	25.0	35	17	.080	.083	.074	.079
	26	29.325	.....	29.422	29.378	18	....	22	20	....	25	22.3	34	16	.076	....	.044	.080
	27	29.498	29.460	29.405	29.454	14	28	23	16	35	26	25.7	33	16	.059	.079	.049	.076
	28	29.182	29.140	29.202	29.175	27	33	33	29	36	36	33.7	39	26	.124	.162	.149	.145
	29	29.279	29.185	29.167	29.210	31	33	32	33	36	35	34.7	40	30	.151	.162	.142	.152
	30	29.274	29.415	29.326	29.338	28	28	23	33	34	29	32.0	37	28	.096	.096	.055	.082
	31	29.337	29.185	29.245	29.256	17	28	23	21	35	29	28.3	38	21	.040	.073	.055	.052
Means....		29.498	29.477	29.514	29.495	....	....	....	15.1	23.3	16.9	19.5	....	....	.065	.078	.072	.072
Feb.	1	29.253	29.250	29.268	29.254	14	21	16	18	26	20	21.3	30	17	.037	.056	.044	.046
	2	29.266	29.241	29.403	29.303	10	10	-2	13	14	2	9.7	21	2	.034	.023	....	.024
	3	29.408	29.401	29.408	29.406	-4	6	4	-2	8	6	4.0	12	-4	.014	.025	.030	.023
	4	29.574	29.692	29.797	29.688	-5	1	-1	-4	3.5	1	0.5	13	....	.023	.018	.019	.020
	5	29.829	29.739	29.808	29.792	-3	9	8	-1	12	10	7.0	15	-6	.015	.031	.040	.029
	6	29.921	29.815	29.620	29.785	....	20	18	....	24	21	15.7	26	2	....	.062	.065	.073
	7	29.453	29.462	29.552	29.489	24	30	26	28	36	29	31.0	37	21	.083	.098	.106	.096
	8	29.538	29.463	29.370	29.457	16	21	20	19	25	23	22.3	30	17	.056	.067	.074	.066
	9	29.220	28.927	28.990	29.046	23	31	28	25	35	31	30.3	38	22	.100	.124	.119	.116
	10	29.095	29.177	29.274	29.182	29	29	25	32	35	28	31.7	37	28	.126	.091	.109	.106
	11	29.423	29.516	29.635	29.525	19	22	18	21	26	20	22.3	29.8	20	.080	.072	.076	.072
	12	29.543	29.555	29.545	29.548	23	24	22	25	28	25	26.0	30	16	.112	.083	.084	.080
	13	29.518	29.472	29.340	29.443	17	25	22	18	30	24	24.0	30	16	.083	.078	.085	.085
	14	29.128	29.135	29.446	29.236	19	10	-5	21	12	-3	10.0	36	-3	.080	.046	.012	.046
	15	29.750	29.781	29.876	29.802	-15	-11	-14	14.5	-9	-13	-12.2	-2	-16	.015	....	.011	.013
	16	29.818	29.573	29.507	29.633	-14	5	8	-15	9	10	01.3	12	-18	....	.010	.040	.020
	17	29.442	29.366	29.415	29.408	18	....	27	22	23	28	24.3	35	10	.053	....	.136	.094
	18	29.365	29.170	29.098	29.211	15	30	30	16	35	32	27.7	37	16	.074	.109	.144	.109
	19	29.050	29.120	29.157	29.109	27	22	24	29	18	27	28.0	34.5	26	.124	.050	.025	.020
	20	29.345	29.475	29.555	29.458	8	14	10	10	18	12	16.0	29	10	.040	.037	.046	.041
	21	29.503	29.248	29.187	29.316	14	35	37	16	40	43	33.0	44	7	.059	.139	.142	.113
	22	29.362	29.384	29.522	29.423	35	38	30	40	43	32	38.3	46	32	.139	.190	.144	.152
	23	29.403	29.163	29.233	29.266	23	25	14	26	28	16	23.3	33.5	16	.089	.100	.059	.080
	24	29.238	29.303	29.548	29.363	7	21	8	9	27	12	16.0	28	8	.037	.044	.017	.033
	25	29.877	29.898	23.924	29.900	-8	1	0	-6	4.5	2	-0.2	15	-7	.007	.006	.021	.014
	26	29.901	29.729	29.628	29.753	4	23	19	6	27	22	18.3	29	-3	.030	.072	.029	.059
	27	29.628	29.653	29.605	29.629	11	30	25	12	33	27	24.0	35	11	.061	.132	.112	.102
	28	29.382	29.307	29.324	29.304	30	44	41	33	49	43	41.7	50	25	.132	.223	.231	.186
Means....		29.473	29.429	29.466	29.456	....	....	....	14.2	24.0	18.3	19.1	....	....	.065	.082	.072	.072

*the northern and northwestern lakes, at Milwaukee, Wisconsin.*

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
. 175	. 327	. 377	. 293	W. NW.	W. NW.	Calm...	2	4	0	3.0	N. 67 W.	0	0	0		
. 582	. 415	. 610	. 536	S. SW.	S. SW.	Calm...	2	4	0	2.0	S. 23 W.	0	10	10		
. 475	. 492	. 334	. 434	Calm...	NW...	NW...	0	12	2	4.7	N. 45 W.	0	10	0		
. 393	. 308	. 416	. 372	NW...	N. NW.	Calm...	12	4	0	5.3	N. 39 W.	0	0	0		
. 257	. 175	. 457	. 296	Calm...	W. NW.	Calm...	0	2	0	0.7	N. 65 W.	0	10	10		
. 457	. 644	. 483	. 528	Calm...	E. NE.	E. NE.	0	4	25	9.7	N. 67 E.	10	10	10		
. 475	. 525	. 509	. 503	E. NE.	E. NE.	E.	12	4	4	6.7	N. 70 E.	10	1	5		
. 659	. 411	. 671	. 587	S. SE.	S. SE.	Calm...	2	2	0	1.3	S. 23 E.	10	8	0		
. 457	. 569	. 905	. 644	Calm...	S. SW.	S. SW.	0	2	4	2.0	S. 23 W.	1	10	10		
. 890	. 705	. 797	. 797	Calm...	Calm...	Calm...	0	0	0	0	Calm...	10	10	10		0.37
. 792	. 802	. 802	. 799	Calm...	Calm...	Calm...	0	0	0	0	Calm...	10	10	10		0.87
. 797	. 824	. 792	. 804	Calm...	SW...	W. SW.	0	2	2	1.3	S. 57 W.	10	10	10		.11
. 721	. 483	. 623	. 609	Calm...	Calm...	S.	0	0	2	0.7	South	10	10	0		
. 784	. 525		. 655	S.	E. SE.	SE.	2	2	4	2.3	S. 40 E.	10	8	10		
. 610	. 775	. 893	. 759	SE.	SE.	Calm...	25	25	0	16.7	S. 45 E.	10	10	8		.58
. 610	. 371	. 610	. 530	W. NW.	W. NW.	W. NW.	12	12	2	9.0	N. 67 W.	0	0	0		
. 568	. 438	. 553	. 520	Calm...	Calm...	Calm...	0	0	0	0	Calm...	10	0	10		
. 460	. 327		. 394	Calm...	Calm...	Calm...	0	0	0	0	Calm...	0	0	10		
. 762	. 556	. 648	. 635	Calm...	W. NW.	W. NW.	0	2	12	4.7	N. 67 W.	10	0	0		.67
. 539	. 345	. 594	. 493	W. NW.	W.	W.	12	25	12	16.3	N. 85 W.	0	0	0		
. 594	. 308	. 345	. 416	W.	W.	W. NW.	2	4	4	3.3	N. 81 W.	10	10	10		
. 369	. 356	. 377	. 367	Calm...	Calm...	Calm...	0	0	0	0	Calm...	10	8	5		
. 553	. 570	. 483	. 535	Calm...	NE	NE	0	4	4	2.6	N. 54 E.	10	10	10		
. 598	. 644	. 584	. 609	E. SE.	E.	Calm...	2	2	0	1.3	S. 79 E.	0	5	5		
. 712	. 480	. 598	. 597	Calm...	Calm...	Calm...	0	0	0	0	Calm...	5	0	0		
. 702		. 622	. 662	Calm...	Calm...	Calm...	0	0	0	0	Calm...	1	5	0		
. 659	. 395	. 634	. 563	Calm...	Calm...	Calm...	0	0	0	0	Calm...	0	0	5		
. 775	. 797	. 705	. 759	E. SE.	W. NW.	Calm...	2	2	0	0	Calm...	10	9	6		
. 800	. 797	. 698	. 765	Calm...	S. SW.	Calm...	0	2	0	0.7	S. 23 W.	10	10	10		
. 510	. 510	. 342	. 454	NW...	NW...	W. NW.	12	12	4	9.0	N. 48 W.	0	0	0		
. 431	. 359	. 342	. 377	W. NW.	W. NW.	W. NW.	4	4	4	4.0	N. 68 W.	5	8	0		
. 587	. 530	. 560	. 554							7.6	N. 66 W.	5.5	5.9	5.3		2.58
. 371	. 397	. 412	. 393	Calm...	W. NW.	W. NW.	0	25	2	9.0	N. 67 W.	0	0	0		
. 438	. 280	. 100	. 273	W. NW.	W. NW.	NW...	2	25	2	9.7	N. 66 W.	10	3	0		
. 345	. 480	. 520	. 448	W. NW.	W.	W.	2	25	2	9.3	N. 89 W.	0	0	0		
. 645	. 351	. 100	. 372	NW...	NW...	Calm...	4	12	0	5.3	N. 45 W.	0	0	0		
. 369	. 418	. 582	. 456	Calm...	W. NW.	W. NW.	0	4	2	2.0	N. 67 W.	10	10	0		
	. 483	. 570	. 526	Calm...	Calm...	Calm...	0	0	0	0	Calm...	0	1	0		
. 543	. 462	. 665	. 557	Calm...	Calm...	NE	0	0	12	4.0	N. 45 E.	10	9	10		
. 541	. 500	. 598	. 546	N. NE.	NE	Calm...	2	2	0	1.3	N. 33 E.	10	10	10		
. 746	. 628	. 685	. 686	S. SW.	SW...	Calm...	4	2	0	2.0	S. 29 W.	10	10	0		
. 694	. 448	. 655	. 599	Calm...	NE	NE	0	2	25	9.0	N. 45 E.	10	10	10		
. 712	. 515	. 702	. 643	NE	NE	Calm...	4	4	0	2.6	N. 45 E.	10	9	0		
. 761	. 543	. 622	. 642	E.	NE	Calm...	2	2	0	1.3	N. 61 E.	10	5	10		
. 840	. 465	. 738	. 681	Calm...	Calm...	Calm...	0	0	0	0	Calm...	10	10	10		
. 712	. 610	. 317	. 546	Calm...	W. NW.	W. NW.	0	45	35	26.7	N. 67 W.	10	10	10		
. 718		. 474	. 596	NW...	W. NW.	Calm...	25	35	0	19.7	N. 58 W.	0	0	0		
	. 146	. 582	. 401	W. SW.	SW	SW	2	35	2	12.7	S. 46 W.	0	8	0		
. 449		. 883	. 666	W. SW.	W.	W. SW.	2	35	2	12.7	S. 89 W.	0	2	0		
. 829	. 537	. 794	. 720	Calm...	SW	W.	0	2	2	1.3	S. 69 W.	0	5	10		
. 775	. 323	. 644	. 581	Calm...	W. NW.	W.	0	12	4	5.3	N. 72 W.	10	7	10		
. 852	. 371	. 610	. 611	W. NW.	W. NW.	Calm...	2	4	0	2.0	N. 67 W.	0	8	0		
. 659	. 557	. 511	. 516	Calm...	S. SW.	W. SW.	0	4	12	5.0	S. 57 W.	10	3	9		
. 557	. 738	. 794	. 696	Calm...	Calm...	NE	0	0	4	1.3	N. 45 E.	10	10	10		
. 634	. 655	. 659	. 649	Calm...	NE	NW...	0	12	2	4.0	N. 37 E.	10	10	10		
. 568	. 303	. 229	. 367	Calm...	W.	NW...	0	4	25	9.3	N. 51 W.	0	1	0		
. 225	. 113	. 438	. 331	NW...	W. NW.	Calm...	4	4	0	2.7	N. 57 W.	0	0	0		
. 520	. 568	. 584	. 557	Calm...	S. SW.	Calm...	0	2	0	0.7	S. 25 W.	5	3	0		
. 804	. 703	. 761	. 756	Calm...	Calm...	Calm...	0	0	0	0	Calm...	0	0	0		
. 703	. 368	. 833	. 635	Calm...	Calm...	Calm...	0	0	0	0	Calm...	10	10	10		
. 616	. 460	. 603	. 560							3.9	N. 66 W.	5.5	5.5	3.6		

*Reductions of the monthly meteorological register of the survey of*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					°	°	°	°	°	°	°	°	°					
March	1	29.306	29.291	29.318	29.305	40	46	....	42	51	39	44.0	51	39	221	245	....	233
	2	29.197	29.114	29.383	29.231	37	46	30	39	49	35	41.0	52	35	194	271	109	131
	3	29.524	29.557	29.592	29.558	19	23	19	24	29	24	25.7	38	23	046	055	046	049
	4	29.688	29.708	29.731	29.709	11	19	16	14	24	21	19.7	28	8	037	046	033	038
	5	29.790	29.770	29.745	29.768	10	21	22	13	28	26	22.3	31	13	034	033	078	049
	6	29.764	29.726	29.606	29.699	22	30	27	27	34	32	31.0	35	19	061	121	090	091
	7	29.787	29.838	29.852	29.826	17	20	21	21	26	24	23.7	35	21	049	040	079	066
	8	29.888	29.805	29.687	29.793	15	23	23	19	30	25	24.7	32	17	040	043	100	061
	9	29.545	29.738	29.789	29.691	21	22	20	24	28	23	25.0	30	23	079	050	074	082
	10	29.740	29.462	29.160	29.454	17	27	30	20	33	33	28.7	34	18	060	078	139	091
	11	28.955	29.162	29.315	29.141	34	....	23	36	....	26	27.7	39	26	170	....	089	114
	12	29.443	29.498	29.602	29.514	18	27	26	21	31	29	27.0	33	22	065	101	106	091
	13	29.677	29.694	29.585	29.652	26	30	29	30	31	31	30.7	35	24	095	155	137	112
	14	29.535	29.562	29.600	29.566	28	31	29	30	33	29	30.7	35	29	130	151	160	147
	15	29.477	29.337	29.312	29.375	24	30	22	26	34	27	29.0	38	25	106	121	061	096
	16	29.202	29.205	29.398	29.268	13	17	8	17	20	10	15.7	31	10	033	060	040	044
	17	29.571	29.589	29.516	29.559	1	9	10	5	14	14	11.0	18	3	....	009	023	016
	18	29.258	29.273	29.338	29.280	19	26	24	22	30	30	27.3	33	14	069	095	064	075
	19	29.263	29.351	29.333	29.316	19	24	22	22	26	26	24.7	32	26	069	106	072	092
	20	29.170	28.943	28.903	29.005	24	24	22	27	27	25	26.3	31	24	095	095	084	091
	21	29.331	29.431	29.493	29.418	11	21	23	13	26	26	21.7	30	12	049	056	089	065
	22	29.555	29.340	29.175	29.357	25	32	27	28	36	40	34.7	42	25	100	129	181	137
	23	29.280	29.355	29.410	29.348	24	27	25	27	30	28	28.3	42	26	095	113	100	106
	24	29.307	29.292	29.403	29.334	24	22	15	28	27	19	24.7	31	17	083	061	040	061
	25	29.566	29.569	29.618	29.584	6	13	14	9	17	18	14.7	32	9	023	033	057	031
	26	29.736	29.751	29.765	29.751	10	23	20	13	29	23	21.7	30	10	034	055	074	064
	27	29.762	29.715	29.562	29.680	21	26	27	27	32	31	30.0	33	20	044	072	101	072
	28	29.245	29.200	29.372	29.272	28	26	23	30	29	26	28.3	34	26	130	106	089	102
	29	29.541	29.555	29.485	29.527	16	30	24	19	33	28	26.7	35	17	056	132	083	090
	30	29.365	29.120	28.992	29.159	26	31	30	29	33	32	31.3	36	25	106	151	144	134
	31	28.790	28.970	29.167	28.952	35	39	35	40	45	39	41.3	47	32	139	160	152	150
Means....		29.457	29.449	29.458	29.455	....	....	....	23.9	30.2	27.3	27.1	....	....	084	098	099	091
April	1	29.424	29.478	29.419	29.440	31	32	31	34	36	33	34.3	40	33	139	129	151	140
	2	29.336	29.293	29.298	29.309	35	37	35	36	40	37	37.7	41	33	191	181	178	180
	3	29.270	29.184	29.218	29.224	36	48	55	38	52	58	49.3	66	36	186	282	353	287
	4	29.234	29.280	29.268	29.261	47	39	37	50	43	40	44.3	60	40	283	186	181	217
	5	29.328	29.441	29.601	29.457	30	30	26	33	35	30	32.7	43	30	132	109	095	112
	6	29.654	29.656	29.706	29.672	23	27	27	28	33	30	30.3	45	26	066	078	113	086
	7	29.710	29.649	29.631	29.663	24	31	27	28	34	29	30.3	34	25	083	130	124	115
	8	29.652	29.636	29.666	29.651	26	31	26	30	35	29	31.3	37	24	095	128	106	116
	9	29.659	29.571	29.486	29.539	29	36	32	31	41	37	36.3	43	26	137	147	116	133
	10	29.334	29.256	29.293	29.294	36	40	35	39	42	37	39.3	46	36	173	221	178	191
	11	29.273	29.149	20.109	29.177	35	43	41	37	48	45	43.3	56	33	178	212	205	198
	12	28.986	29.199	29.337	29.174	46	45	39	52	53	45	50.0	57	45	232	194	160	195
	13	29.610	29.565	29.433	29.536	35	35	33	39	41	36	38.7	46	35	152	126	149	141
	14	29.238	29.328	29.450	29.339	38	43	40	41	52	45	46.0	54	35	190	160	122	177
	15	29.553	29.508	29.415	29.502	32	36	32	36	40	34	36.7	46	34	129	160	155	142
	16	29.423	29.356	29.298	29.359	37	41	39	40	47	43	43.3	51	34	181	179	186	182
	17	29.361	29.330	....	29.346	42	50	51	46	57	55	52.7	60	43	215	282	321	282
	18	29.372	29.391	29.416	29.393	57	63	55	61	72	58	63.7	74	49	412	455	353	430
	19	29.446	29.306	29.207	29.320	33	37	39	35	36	40	37.0	60	35	162	....	225	193
	20	29.044	28.984	28.946	28.991	50	53	48	54	63	57	58.0	66	40	308	270	217	265
	21	28.946	28.969	29.019	28.978	40	47	43	46	59	52	52.3	62	46	169	165	160	165
	22	29.141	29.148	29.144	29.144	41	44	37	46	51	43	46.7	56	39	192	196	142	177
	23	29.102	29.147	29.147	29.165	34	39	36	40	49	41	43.3	....	40	118	108	147	121
	24	29.197	29.154	29.082	29.144	37	42	39	42	54	46	47.3	56	38	155	110	147	137
	25	29.189	29.266	29.343	29.266	33	37	34	41	46	38	41.7	56	37	084	103	144	110
	26	29.448	29.403	29.296	29.382	33	40	35	40	50	41	43.7	51	30	097	117	126	113
	27	29.172	29.009	28.921	29.034	39	49	47	45	57	51	51.0	63	40	160	242	270	224
	28	29.121	29.352	29.500	29.324	48	47	41	54	58	48	53.3	69	40	256	178	166	197
	29	29.537	29.481	29.420	29.479	44	42	37</										

the northern and northwestern lakes, at Milwaukee, Wisconsin.

VAPOR.				WIND.							Amount of cloudiness, in (0 = clear sky) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.		Resultant velocity, in miles per hour.	Resultant direction.						
7 a. m.	9 a. m.	3 p. m.	Mean.	7 a. m.	9 a. m.	3 p. m.	7 a. m.	9 a. m.			3 p. m.			7 a. m.	9 a. m.	3 p. m.
828	653	.....	741	Calm	Calm	Calm	0	0	0	0	Calm	10	10	3	.....	.....
816	781	537	711	Calm	W. NW	W. NW	0	12	12	8.0	N. 67 W.	10	10	0	.....	0.08
358	342	358	353	W. NW	W. NW	W. NW	35	60	45	46.7	N. 68 W.	0	0	0	.....	.....
457	358	293	369	NW	W. NW	NW	35	35	22.7	N. 56 W.	0	0	0	.....	.....	
438	215	529	394	NW	W. NW	Calm	2	4	0	2.0	N. 61 W.	0	0	0	.....	.....
415	617	496	509	Calm	Calm	NW	0	0	2	0.7	N. 45 W.	10	10	10	.....	.....
431	281	610	441	N	N	Calm	4	4	0	2.7	N	0	0	0	.....	.....
392	260	746	468	Calm	Calm	Calm	0	0	0	0.7	Calm	2	3	0	.....	.....
610	323	596	510	N. NW	NE	Calm	12	25	0	10.3	N. 25 E.	10	0	0	.....	.01
556	415	703	558	Calm	S. SE	S	0	12	2	4.7	S. 19 E.	0	9	10	.....	.37
602	.....	634	718	W. NW	NE	NE	2	25	35	19.7	N. 43 E.	10	10	10	.....	.....
570	582	665	608	Calm	Calm	Calm	0	0	0	0	Calm	10	10	9	.....	.....
569	803	788	750	NE	NE	NE	4	25	25	18.0	N. 45 E.	5	9	10	.....	.16
782	800	100	561	NE	NE	Calm	25	4	0	9.7	N. 45 E.	10	0	0	.....	.....
754	617	415	585	Calm	W. NW	W. NW	0	2	4	2.0	N. 67 W.	5	10	0	.....	.....
350	556	582	496	W. NW	W. NW	NW	12	35	35	27.0	N. 58 W.	8	10	0	.....	.....
.....	106	220	193	N. NW	W. NW	Calm	25	25	0	15.3	N. 45 W.	0	0	0	.....	.....
584	569	361	508	W	NW	Calm	2	12	0	4.7	N. 51 W.	9	0	10	.....	.....
584	754	515	618	NE	E. NE	NE	25	12	4	13.7	N. 51 E.	9	10	10	.....	.....
644	644	622	637	E	E	NE	12	12	35	18.0	N. 63 E.	10	10	10	.....	.14
623	397	634	551	N	W. NW	Calm	2	4	0	1.7	N. 47 W.	0	0	0	.....	.....
655	610	732	666	Calm	S. SE	SW	0	4	2	1.7	S. 1 E.	10	10	10	.....	.30
644	675	655	658	N. NW	N. NW	Calm	25	12	0	12.3	N. 23 W.	10	2	0	.....	.....
543	415	392	450	Calm	N. NW	NW	0	25	25	16.3	N. 34 W.	8	10	0	.....	.....
356	350	371	359	N	NW	NW	25	4	4	10.3	N. 10 W.	0	0	0	.....	.....
438	342	598	459	Calm	S. SE	Calm	0	4	0	1.3	S. 29 E.	0	0	0	.....	.....
303	568	562	428	SE	SE	E. NE	2	2	4	2.3	S. 79 E.	10	10	10	.....	.....
782	663	634	624	E. NE	N. NE	N	4	12	4	5.3	N. 32 E.	10	10	10	.....	.39
541	703	543	506	N. NE	N. NE	W. SW	4	4	2	2.3	N. 15 W.	0	0	0	.....	.....
685	800	794	753	SW	S	Calm	2	12	0	4.7	S. 5 W.	10	10	0	.....	.....
557	533	636	575	W. NW	NW	W. NW	25	33	4	20.7	N. 56 W.	4	9	5	.....	.....
668	582	547	546	.....	.....	.....	.....	.....	5.9	N. 24 W.	5.9	5.5	3.8	.....	1.50	
712	610	800	707	Calm	E. NE	E. NE	4	2.7	0	2.7	N. 68 E.	0	10	10	.....	.....
900	732	807	813	E	E	E. NE	2	2.3	0	2.3	N. 84 E.	10	9	9	.....	1.95
811	727	816	785	SE	Calm	SW	0	0.9	0	0.9	S	2	8	0	.....	.....
788	680	732	729	N. NW	N. NW	Calm	0	2.7	0	2.7	N. 22 W.	10	10	10	.....	.94
703	537	546	603	W. NW	W. NW	W. NW	35	24.7	0	24.7	N. 67 W.	10	9	10	.....	.....
433	415	675	508	W. NW	NW	Calm	0	9.7	0	9.7	N. 49 W.	10	9	0	.....	.....
543	712	775	677	N. NE	E	Calm	0	1.0	0	1.0	N. 53 E.	0	10	0	.....	.....
569	628	635	621	Calm	SE	Calm	0	0.7	0	0.7	N. 45 E.	0	0	0	.....	.....
728	567	527	627	Calm	S. SW	S. SE	2	4.3	0	4.3	S. 17 W.	5	0	10	.....	.....
726	824	807	787	SW	W. NW	Calm	0	1.3	0	1.3	S. 79 W.	10	10	0	.....	.15
807	631	684	707	Calm	S. SE	S. SE	2	2.0	0	2.0	S. 23 E.	5	9	0	.....	.....
598	483	533	538	SW	W. NW	NW	4	18.0	0	18.0	N. 78 W.	9	1	0	.....	.63
636	468	705	610	SE	E. SE	SW	2	2.0	0	2.0	S. 38 E.	0	8	10	.....	.....
738	411	607	585	W. NW	N. NW	Calm	0	4.3	0	4.3	N. 30 W.	8	0	9	.....	.....
610	645	792	692	E. NE	E. NE	NE	2	3.3	0	3.3	N. 62 E.	0	5	3	.....	.....
732	554	629	633	E. SE	SE	S. SE	2	2.0	0	2.0	S. 30 E.	3	5	0	.....	.....
691	577	743	670	S. SE	S. SE	Calm	0	1.3	0	1.3	S. 24 E.	10	10	3	.....	.....
769	582	816	722	SW	W	N. NE	2	1.3	0	1.3	N. 84 W.	10	0	0	.....	.....
797	.....	910	853	NE	NE	Calm	0	15.7	0	15.7	N. 45 E.	0	10	10	.....	.65
738	470	465	558	W. SW	SW	SW	4	24.3	0	24.3	S. 52 W.	5	1	3	.....	.....
543	330	411	438	W. NW	W	N. NW	2	21.3	0	21.3	N. 77 W.	2	0	8	.....	.....
617	525	511	551	N. NW	SE	NE	2	1.0	0	1.0	N. 89 E.	0	3	0	.....	.....
476	307	567	450	NE	NE	Calm	0	23.3	0	23.3	N. 45 W.	0	0	0	.....	.....
577	264	471	437	N. NE	NW	NW	2	11.0	0	11.0	N. 1 W.	0	5	9	.....	.02
328	330	628	429	N. NE	SE	Calm	0	1.7	0	1.7	N. 81 E.	0	5	0	.....	.....
393	323	484	401	Calm	S. SE	S. SE	2	2.0	0	2.0	S. 21 E.	0	0	0	.....	.....
533	521	722	592	S. SE	S. SE	Calm	0	5.3	0	5.3	S. 29 E.	1	1	1	.....	.....
613	370	494	492	W	N. NW	Calm	0	19.3	0	19.3	N. 56 E.	5	2	0	.....	.....
638	399	446	494	NE	SE	Calm	0	1.7	0	1.7	S. 74 E.	0	1	0	.....	.....
522	468	636	549	E. SE	E. NE	E. NE	4	5.7	0	5.7	N. 73 E.	10	10	10	.....	.....
644	521	649	608	.....	.....	.....	.....	.....	2.6	N. 49 W.	4.9	41.0	4.3	.....	2.04	

Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					°	°	°	°	°	°	°	°	°					
May	1	28.862	29.062	29.337	29.027	36	34	32	38	35	36	36.3	42	33	186	183	129	116
	2	29.457	29.432	29.436	29.442	30	35	32	35	42	37	38.0	45	32	109	113	116	113
	3	29.439	29.396	29.425	29.420	36	42	38	42	57	45	48.0	58	34	134	171	132	114
	4	29.348	29.286	29.270	29.301	41	46	42	47	59	50	52.0	63	34	179	140	162	160
	5	29.368	29.406	29.458	29.411	34	38	35	37	46	38	40.3	53	37	157	125	165	142
	6	29.562	29.581	29.573	29.574	35	40	33	39	48	50	45.7	40	37	152	143	...	147
	7	29.603	29.508	29.458	29.523	39	42	39	44	48	44	45.3	53	35	173	189	173	172
	8	29.308	29.188	29.203	29.233	41	42	45	45	44	47	45.3	49	43	205	241	273	248
	9	29.206	29.176	29.207	29.196	49	54	42	54	70	45	57.3	71	43	232	206	222	220
	10	29.230	29.161	29.168	29.186	44	54	49	48	72	57	59.0	74	41	236	179	242	219
	11	29.186	29.176	29.155	29.172	53	56	53	61	69	61	63.7	73	51	297	276	257	276
	12	29.182	29.166	29.221	29.192	54	57	48	61	70	60	63.7	73	56	325	293	177	265
	13	29.430	29.518	29.513	29.487	36	38	35	41	44	39	41.3	62	39	147	151	152	150
	14	29.535	29.418	29.300	29.418	39	44	42	44	53	48	48.3	62	35	173	170	179	171
	15	29.064	29.958	29.119	29.047	49	58	40	58	66	42	55.3	74	42	221	376	221	275
	16	29.326	29.404	29.371	29.367	36	37	33	39	45	39	41.0	46	39	173	116	110	153
	17	29.339	29.179	29.084	29.201	38	49	49	43	58	58	53.0	59	33	164	225	229	227
	18	29.081	29.158	29.184	29.141	55	41	40	62	47	43	50.7	68	43	340	179	212	242
	19	29.154	29.033	29.018	29.068	45	61	62	50	73	72	65.0	88	42	234	376	429	344
	20	29.138	29.178	29.282	29.199	52	54	47	61	73	61	65.0	79	61	269	116	132	174
	21	29.448	29.507	29.520	29.492	43	42	36	53	51	41	48.3	74	41	146	149	147	147
	22	29.603	29.538	29.503	29.548	39	39	36	43	46	44	44.3	50	38	186	147	102	147
	23	29.555	.....	29.522	29.538	42	41	40	51	53	46	50.0	56	37	142	100	169	137
	24	29.505	29.407	29.289	29.400	44	54	50	54	70	60	61.3	76	39	157	206	229	197
	25	29.229	29.192	29.098	29.173	61	44	41	63	55	50	56.0	76	50	510	144	133	264
	26	28.983	28.908	28.841	28.911	42	50	43	49	59	46	51.3	60	46	175	242	252	217
	27	28.769	28.937	29.119	28.942	40	42	43	42	45	42	45.0	49	43	221	222	212	220
	28	29.162	29.129	29.139	29.140	41	44	42	46	48	44	46.0	49	44	192	236	241	223
	29	29.204	29.101	29.196	29.167	41	51	43	45	59	53	52.3	62	43	205	229	146	240
	30	29.106	29.153	29.298	29.186	51	42	37	60	48	41	49.7	71	41	255	189	162	224
	31	29.463	29.488	29.445	29.465	36	41	36	44	50	43	45.7	52	40	180	132	121	140
Means....		29.286	29.258	29.282	29.278	....	....	....	48.3	54.9	48.0	50.4	....	....	210	191	129	156
June	1	29.428	29.393	29.367	29.396	41	47	46	46	55	50	50.3	59	42	192	217	256	228
	2	29.127	29.264	29.209	29.200	50	57	48	57	69	55	60.3	72	45	268	326	243	279
	3	29.311	29.065	29.063	29.146	52	57	49	61	72	55	62.7	75	61	269	222	242	272
	4	29.045	29.040	29.048	29.044	52	57	48	59	70	53	60.7	75	50	296	293	249	286
	5	28.936	28.915	28.855	28.902	50	56	56	52	60	60	57.3	66	50	334	326	246	313
	6	28.813	28.925	29.082	28.942	53	60	58	56	63	63	60.7	69	55	363	472	416	419
	7	29.264	29.376	29.193	29.278	58	72	53	65	80	57	67.3	75	58	329	677	350	472
	8	29.070	28.967	29.082	29.043	57	69	64	63	77	70	70.0	87	54	376	601	516	501
	9	29.241	29.283	29.391	29.305	53	56	55	63	73	62	66.0	75	57	442	223	340	325
	10	29.578	29.608	29.552	29.579	55	51	44	64	60	50	58.0	66	50	314	255	222	222
	11	29.484	29.359	29.331	29.391	50	58	60	53	65	62	60.0	69	52	321	329	421	420
	12	29.188	29.093	29.082	29.124	59	65	64	63	68	67	66.0	73	60	447	577	556	577
	13	29.110	29.105	29.132	29.116	64	78	56	69	81	69	73.0	82	66	529	912	276	574
	14	29.221	29.181	29.173	29.192	53	55	53	64	73	65	67.3	76	56	257	194	244	222
	15	29.228	29.186	29.196	29.203	54	70	52	61	74	57	64.0	73	65	325	679	722	472
	16	29.214	29.191	29.284	29.221	52	50	47	58	55	51	54.7	73	51	309	225	270	291
	17	29.225	29.297	29.287	29.290	50	47	43	56	55	50	53.7	61	45	282	217	156	272
	18	29.215	29.237	29.199	29.217	44	50	45	52	66	53	57.0	70	45	183	150	194	172
	19	29.332	29.349	29.351	29.344	49	47	53	59	69	60	62.7	78	46	216	633	310	176
	20	29.384	29.271	29.255	29.303	52	67	62	67	77	68	70.7	85	54	363	527	476	452
	21	29.160	29.155	29.208	29.174	68	66	62	75	72	67	71.3	80	66	591	559	422	346
	22	29.385	29.223	29.223	29.277	....	65	57	....	72	62	67.0	76	63	....	524	322	417
	23	29.192	29.153	29.163	29.171	62	66	61	65	72	66	67.7	76	61	516	559	470	512
	24	29.260	.....	29.317	29.288	70	75	73	77	88	80	81.7	92	64	639	622	717	623
	25	29.432	29.437	29.390	29.420	71	68	65	77	79	71	75.7	91	64	678	537	537	524
	26	29.243	29.212	29.303	29.253	64	70	57	71	84	66	73.7	85	66	503	545	346	455
	27	29.265	29.418	29.486	29.390	56	50	46	64	53	50	55.7	69	50	343	321	256	377
	28	29.562	29.587	29.536	29.562	49	49	50	55	61	58	58.0	68	46	269	190	215	222
	29	29.539	29.483	29.473	29.498	54	57	55	62	74	63	66.3	76	55	312	240	257	229
	30	29.498	29.451	29														



northern and northwestern lakes. at Milwaukee, Wisconsin.

VAPOR.				WIND.								Amount of cloudiness. (0=clear sky.) (10=sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
811	.P98	.610	.773	E . . . .	NE . . . .	NE . . . .	4	90	2	31.7	N. 46 E.	10	10	0		0.69
537	.420	.527	.495	N. NE . .	E. SE . .	Calm . .	2	4	0	1.3	N. 85 E.	0	0	1		
500	.151	.459	.370	NW . . .	NW . . .	Calm . .	2	4	0	2.0	N. 45 W.	0	5	0		
554	.281	.450	.428	NW . . .	NW . . .	Calm . .	2	12	0	4.7	N. 49 W.	0	5	0		
712	.400	.719	.610	NE . . . .	E. SE . .	Calm . .	12	2	0	4.3	N. 53 E.	9	7	5		
636	.426		.531	NE . . . .	S . . . .	Calm . .	12	4	0	3.3	N. 63 E.	0	0	0		
597	.563	.597	.586	E. NE . .	SE . . . .	Calm . .	4	2	0	1.7	N. 87 E.	0	8	8		
684	.836	.847	.789	Calm . .	E. NE . .	Calm . .	0	2	0	0.7	N. 67 E.	10	10	10		.54
674	.281	.762	.572	W. NW . .	W. NW . .	Calm . .	2	12	0	4.7	N. 66 W.	0	5	0		
704	.229	.521	.485	Calm . .	W . . . .	Calm . .	0	4	0	1.3	West . .	0	3	0		
553	.391	.553	.499	Calm . .	S. SE . .	S. SW . .	0	4	2	1.7	S. 8 W.	0	5	0		
606	.400	.342	.449	SW . . .	NW . . .	NW . . .	4	12	4	5.3	N. 52 W.	5	10	10		
567	.522	.636	.575	NE . . . .	E. SE . .	Calm . .	35	2	0	11.7	N. 49 E.	0	0	0		
597	.423	.563	.528	Calm . .	S. SE . .	Calm . .	0	12	0	4.0	S. 22 E.	0	1	0		
475	.588	.829	.631	W. SW . .	W . . . .	NE . . .	25	25	75	14.7	N. 6 E.	10	10	10		.50
726	.386	.463	.525	NE . . . .	NE . . . .	NE . . . .	60	60	4	41.3	N. 45 E.	10	0	0		
587	.475	.475	.512	Calm . .	S. SE . .	SW . . .	0	12	2	4.3	S. 14 W.	0	8	8		
612	.554	.750	.639	NW . . .	NE . . . .	NE . . . .	4	25	2	9.0	N. 38 E.	3	8	0		
646	.464	.539	.550	Calm . .	S . . . .	Calm . .	0	4	0	1.3	South . .	0	0	0		
502	.505	.257	.321	NW . . .	W. NW . .	NW . . .	35	35	12	26.7	N. 55 W.	0	5	0		
363	.399	.567	.443	N. NE . .	S. SE . .	E. NE . .	12	4	4	4.3	N. 47 E.	0	0	0		
609	.471	.372	.504	E. NE . .	E. SE . .	Calm . .	2	2	0	1.2	East . . .	10	10	10		
399	.249	.543	.397	Calm . .	S. SE . .	Calm . .	0	4	0	1.3	S. 22 E.	0	10	10		
376	.281	.442	.366	Calm . .	N . . . .	Calm . .	0	2	0	0.7	North . .	10	10	10		
886	.333	.386	.535	W. NW . .	NE . . . .	Calm . .	4	12	0	3.7	N. 25 E.	10	10	10		
505	.484	.767	.585	NE . . . .	E. NE . .	NE . . . .	4	4	45	17.7	N. 46 E.	0	9	10		
829	.762	.631	.741	NE . . . .	NE . . . .	N. NE . .	75	60	2	12.0	N. 44 E.	10	10	10		.16
617	.704	.836	.719	NW . . .	Calm . .	NW . . .	4	0	2	2.0	N. 45 W.	10	10	0		.17
684	.537	.363	.528	NW . . .	NW . . .	W . . . .	4	12	2	6.0	N. 49 W.	5	2	0		
493	.563	.653	.570	W. NW . .	NE . . . .	NE . . . .	12	45	2	14.7	N. 31 E.	5	10	0		
372	.386	.433	.397	E. NE . .	E . . . .	Calm . .	4	2	0	2.0	N. 76 E.	0	0	1		
.596	.453	.563	.537							6.2	N. 30 E.	3.8	5.8	3.6		2.06
.617	.502	.716	.612	Calm . .	Calm . .	Calm . .	0	0	0	0.0	Calm . . .	8	0	1		.40
.577	.432	.561	.523	Calm . .	E . . . .	Calm . .	0	2	0	0.7	East . . .	0	1	0		
.502	.340	.620	.487	NE . . . .	NE . . . .	Calm . .	4	25	0	9.7	N. 45 E.	0	0	0		
.592	.400	.667	.553	Calm . .	E . . . .	NE . . . .	0	2	2	1.3	N. 69 E.	0	0	1		
.861	.765	.765	.797	Calm . .	S. SE . .	Calm . .	0	4	0	1.3	S. 22 E.	10	10	10		.57
.809	.831	.723	.788	W. SW . .	W . . . .	W. NW . .	4	4	12	0.3	N. 81 W.	10	10	2		.56
.631	.661	.752	.681	NW . . .	NW . . .	Calm . .	4	4	0	2.7	N. 45 W.	0	10	0		.17
.670	.648	.704	.674	S. SE . .	S . . . .	W. SW . .	5	12	2	5.7	S. 1 E.	1	5	8		.02
.545	.276	.612	.478	W . . . .	W. NW . .	Calm . .	12	35	0	15.3	N. 73 W.	0	0	0		
.527	.493	.581	.500	E. NE . .	E. NE . .	NE . . . .	2	4	25	10.3	N. 49 E.	0	3	0		
.798	.631	.884	.771	S. SE . .	SE . . . .	Calm . .	4	12	0	5.3	S. 39 E.	10	1	6		.67
.776	.843	.841	.820	Calm . .	E. NE . .	Calm . .	0	2	0	0.7	N. 65 E.	10	10	8		.45
.747	.868	.391	.669	W . . . .	W. SW . .	W . . . .	12	12	4	9.3	S. 81 W.	10	2	0		.20
.432	.240	.395	.356	W. NW . .	W. NW . .	W. NW . .	25	45	25	31.7	N. 67 W.	0	0	0		
.606	.810	.692	.703	W. NW . .	W. NW . .	Calm . .	12	25	0	12.3	N. 67 W.	0	2	1		.02
.641	.681	.722	.681	NW . . .	NW . . .	Calm . .	4	2	0	2.0	N. 45 W.	1	10	0		.28
.627	.502	.515	.548	N . . . .	NE . . . .	NE . . . .	2	2	12	5.0	N. 41 E.	0	2	0		.02
.472	.234	.483	.396	N. NW . .	N . . . .	Calm . .	4	35	0	12.7	N. 2 W.	2	0	0		
.432	.047	.599	.359	Calm . .	SE . . . .	Calm . .	0	2	0	0.7	S. 45 E.	0	0	0		
.550	.569	.695	.605	SW . . .	S. SE . .	Calm . .	2	4	0	1.7	S. 1 E.	0	3	0		
.681	.712	.740	.711	W. SW . .	W. NW . .	Calm . .	4	2	0	1.7	S. 82 W.	5	10	0		.34
	.868	.718	.743	Calm . .	S. SE . .	Calm . .	0	4	0	1.3	S. 22 E.	0	5	0		
.836	.712	.735	.761	Calm . .	S. SE . .	Calm . .	0	2	0	0.7	S. 23 E.	10	5	8		.70
.689	.523	.701	.638	W. SW . .	W. SW . .	Calm . .	4	25	0	9.7	S. 67 W.	2	2	0		
.731	.542	.708	.660	NW . . .	S . . . .	Calm . .	12	4	0	3.3	N. 63 W.	8	2	3		.29
.663	.468	.543	.558	SW . . .	W. NW . .	NW . . .	4	12	2	5.3	N. 78 W.	9	1	0		.10
.575	.798	.716	.696	NW . . .	NE . . . .	Calm . .	12	12	0	5.7	North . .	0	10	2		.04
.620	.353	.529	.501	NW . . .	SE . . . .	Calm . .	2	2	0	0.0	Calm . . .	0	1	1		
.561	.286	.568	.472	NW . . .	W. NW . .	Calm . .	4	12	0	5.0	N. 61 W.	3	0	0		
.335	.525	.625	.495	Calm . .	S. SE . .	Calm . .	0	2	0	0.7	S. 25 E.	0	5	0		
.624	.552	.650	.608							2.8	N. 58 W.	3.3	3.7	1.7		4.83



*Reductions of the monthly meteorological register of the survey*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
					7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1865.					°	°	°	°	°	°	°	°	°					
July	1	29.277	29.192	29.202	29.224	54.5	59.0	53.5	56.5	61.5	55.5	57.8	65.5	48.5	399	467	383	416
	2	29.242	29.307	29.338	29.296	53.0	61.5	58.0	55.0	66.5	63.0	61.5	72.5	51.5	376	420	416	424
	3	29.324	29.252	29.331	29.302	55.0	62.0	59.5	58.0	66.0	63.0	63.0	74.5	51.0	393	476	422	431
	4	29.486	29.476	29.486	29.483	57.0	60.5	57.0	61.0	68.0	62.0	63.7	71.0	56.0	412	427	394	413
	5	29.581	29.613	29.562	29.585	52.5	56.5	53.0	57.0	63.5	57.5	59.3	68.0	47.5	336	364	343	366
	6	29.420	29.223	29.257	29.300	55.5	65.0	66.5	57.5	70.0	70.0	65.8	75.0	50.5	415	551	611	523
	7	29.396	29.454	29.473	29.441	60.0	61.5	57.0	64.5	71.0	62.0	65.8	74.0	57.5	452	419	392	421
	8	29.465	29.421	29.428	29.438	56.0	61.5	56.5	60.5	69.0	63.0	64.1	74.5	50.5	389	445	371	422
	9	29.582	29.623	29.577	29.594	56.5	59.5	56.0	62.0	68.0	61.0	63.7	71.5	48.0	384	396	383	394
	10	29.552	29.493	29.404	29.486	55.5	61.0	56.0	59.0	70.0	62.0	63.7	74.5	52.0	395	416	362	421
	11	29.349	29.338	29.291	29.326	56.5	64.0	58.5	62.0	72.5	63.0	65.8	75.5	46.0	348	483	411	412
	12	29.188	29.286	29.394	29.289	60.0	57.0	47.5	64.0	63.5	52.5	60.0	71.0	49.5	465	379	263	369
	13	29.514	29.568	29.580	29.554	49.5	54.5	48.5	55.0	63.0	54.0	57.3	66.0	44.0	282	313	241	322
	14	29.555	29.516	29.472	29.514	46.5	56.5	52.5	50.0	63.0	57.0	56.7	67.0	43.5	271	371	338	336
	15	29.447	29.441	29.429	29.439	55.0	59.5	53.5	58.5	68.0	58.0	61.5	71.0	41.0	387	396	352	378
	16	29.419	29.416	29.394	29.410	53.5	60.5	54.0	58.5	69.0	60.0	61.5	71.5	46.5	343	414	332	363
	17	29.407	29.355	29.294	29.352	54.5	64.0	59.0	59.0	75.0	65.5	66.5	77.5	47.0	366	449	413	409
	18	29.231	29.120	29.118	29.156	56.5	63.0	60.5	63.0	77.0	69.5	69.8	80.0	57.5	371	389	407	389
	19	29.042	29.001	29.073	29.039	57.5	61.5	60.5	62.5	62.4	65.0	65.3	71.5	65.0	407	452	467	442
	20	29.233	29.326	29.405	29.321	56.0	59.0	53.5	62.0	66.5	59.0	62.5	69.0	56.5	363	401	337	367
	21	29.524	29.554	29.544	29.541	56.0	56.5	53.5	59.5	62.5	58.0	60.0	66.5	52.5	403	377	351	377
	22	29.648	29.663	29.633	29.648	57.5	57.0	55.5	63.0	65.0	61.0	63.0	70.0	50.5	400	339	362	376
	23	29.607	29.565	29.519	29.564	57.0	60.0	56.5	63.0	70.0	62.0	65.0	73.0	51.5	386	385	324	365
	24	29.506	29.464	29.383	29.451	57.0	59.0	58.0	60.0	62.5	62.0	61.5	71.0	56.0	426	455	422	434
	25	29.054	28.980	29.072	29.037	60.5	62.0	58.0	61.0	68.5	62.0	63.8	73.5	53.5	520	469	422	473
	26	29.241	29.332	29.328	29.300	60.0	64.0	62.5	64.5	74.5	68.0	69.0	78.0	54.5	458	456	422	473
	27	29.303	29.238	29.203	29.248	60.5	64.5	62.5	64.0	70.5	66.5	67.0	73.5	56.5	480	527	512	506
	28	29.266	29.268	29.302	29.279	61.0	63.5	56.5	65.0	69.5	60.5	65.0	73.5	57.5	483	505	404	464
	29	29.487	29.559	29.577	29.541	50.0	54.0	50.5	53.0	61.0	55.0	56.3	64.0	49.0	321	325	312	312
	30	29.679	29.701	29.664	29.681	54.0	61.0	54.5	59.0	69.0	59.0	62.3	71.5	42.0	351	443	366	377
	31	29.691	29.604	29.594	29.643	58.0	65.0	58.5	61.0	71.5	62.5	65.0	74.0	47.5	443	530	437	470
Means....		29.409	29.400	29.398	29.402	.....	.....	.....	60.6	66.7	61.3	62.9	.....	.....	394	429	370	405
Aug.	1	29.652	29.620	29.583	29.618	60.5	67.0	62.0	63.0	74.0	66.5	67.8	77.5	56.0	494	568	496	517
	2	29.580	29.529	29.476	29.528	64.5	67.0	63.5	67.0	73.5	67.0	69.2	77.0	59.0	573	575	539	562
	3	29.456	29.568	29.591	29.538	64.0	62.5	54.5	66.5	69.5	59.5	65.2	72.0	57.0	563	472	354	465
	4	29.620	29.604	29.576	29.600	56.0	61.5	56.5	60.0	69.0	62.0	63.7	73.0	50.5	422	445	324	417
	5	29.617	29.608	29.506	29.577	59.0	63.0	58.5	62.0	71.5	64.0	65.8	74.5	52.0	460	462	418	447
	6	29.137	29.048	29.106	29.097	60.0	64.5	57.5	61.0	67.5	59.5	62.7	70.0	56.0	505	561	447	506
	7	29.261	29.285	29.319	29.288	56.0	63.5	57.0	59.0	71.5	62.0	64.2	76.0	53.5	409	479	392	429
	8	29.358	29.414	29.424	29.399	59.0	67.0	60.5	62.0	74.5	64.0	66.8	77.5	52.0	460	561	424	500
	9	29.449	29.316	29.154	29.306	62.0	63.5	60.0	64.0	67.5	61.0	64.2	73.0	58.0	529	532	505	521
	10	29.154	29.248	29.372	29.258	64.5	65.0	56.0	66.5	72.5	60.5	66.5	75.0	57.0	579	517	382	496
	11	29.510	29.519	29.505	29.511	50.5	51.0	48.5	56.5	62.0	54.5	57.7	65.5	49.0	289	229	262	309
	12	29.500	29.515	29.482	29.499	55.5	60.0	55.5	59.5	70.0	60.5	63.3	73.5	47.5	388	325	375	363
	13	29.507	29.482	29.479	29.469	56.0	66.0	60.0	61.0	76.0	66.0	67.7	78.0	54.5	383	505	432	442
	14	29.469	29.450	29.414	29.444	61.5	69.0	60.5	64.0	78.0	66.5	69.5	82.0	56.0	513	564	447	502
	15	29.391	29.408	29.435	29.418	61.0	65.5	53.5	64.5	74.0	58.5	65.7	76.5	55.5	490	515	345	442
	16	29.532	29.591	29.564	29.562	51.5	56.0	52.5	58.5	67.5	59.0	61.7	70.5	53.0	282	296	314	297
	17	29.523	29.560	29.501	29.518	53.0	64.5	56.5	55.5	76.0	62.0	64.5	(*)	50.5	370	453	384	402
	18	29.469	29.437	29.441	29.449	57.5	61.5	61.5	63.5	70.0	66.5	67.7	(*)	56.5	315	432	421	426
	19	29.472	29.438	29.393	29.434	53.0	62.5	59.5	56.5	72.0	64.5	64.3	(*)	52.0	356	429	411	412
	20	29.254	29.205	29.216	29.225	63.5	68.5	62.5	66.0	71.5	65.0	67.5	(*)	59.5	552	656	532	521
	21	29.262	29.329	29.344	29.312	56.5	56.0	53.0	58.5	61.5	58.0	59.3	(*)	53.0	430	376	336	361
	22	29.431	29.464	29.446	29.447	53.0	55.5	50.0	59.5	65.0	57.0	60.5	(*)	50.0	317	315	265	301
	23	29.501	29.516	29.543	29.520	51.0	54.0	48.5	58.0	63.0	54.5	58.5	(*)	49.0	282	286	262	277
	24	29.631	29.573	29.527	29.577	49.0	59.0	56.5	52.0	68.0	61.5	60.5	(*)	46.0	318	322	291	306
	25	29.531	29.518	29.487	29.512	54.0	63.5	62.0	59.0	74.5	68.0	67.2	(*)	56.0	351	432	476	422
	26	29.445	29.358	29.473	29.425	60.5	72.0	61.5	65.0	82.0	67.5	71.5	(*)	63.0	467	631	465	527
	27	29.540	29.600	29.601	29.580	55.0	57.5	53.0	59.5	66.5	57.5	61.2	(*)	54.0	373	333	343	357
	28	29.665	22.508	29.497	29.523	54.5	63.0	53.0	58.0	72.5	59.0	63.2	(*)	51.5	379	442	323	344
	29	29.480	29.493	29.502	29.493	57.0	64.0	59.5	60.0	70.0	62.5	64.2	(*)	51.5	426	516	462	474
	30	29.526	29.487	29.477	29.493	62.5	69.5	64.0	65.0	76.0	68.0	69.7	(*)	57.5	539	623	543	572
	31	29.486	29.428	29.472	29.462	65.5	70.5	63.5	67.5	80.0	62.0	71.8	(*)	62.0	601	617	526	567
Means....		29.413	29.455	29.452	29.457	.....	.....	.....	61.2	71.2	62.3	64.9	.....	.....	435	473	413	446

\* Maximum; thermometer broken.

the northern and northwestern lakes, at Thunder Bay Island, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and deci- mals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1, 000.				Direction. From whence.			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
.873	.855	.870	.866	SE.....	S.....	W.....	1.4	6.6	5.5	3.0	S. 33 W.	9	7	10	.....	.14
.869	.738	.723	.777	NW....	NW....	NW....	3.9	8.2	6.6	6.3	N. 45 W.	10	8	3	.....	.17
.816	.695	.661	.724	SW....	S.....	N.....	3.4	6.3	6.2	1.2	S. 43 W.	10	1	10	.....	.....
.769	.624	.718	.704	NW....	N. NW.	NW....	8.5	7.5	3.5	6.3	N. 36 W.	10	9	10	.....	.....
.722	.622	.725	.693	E.....	E. SE.	SE....	6.5	7.6	6.1	6.3	S. 68 E.	10	10	10	.....	.....
.875	.751	.823	.816	S.....	S.....	N.....	7.4	9.5	5.3	3.9	South...	10	8	10	.....	.43
.755	.553	.718	.679	N.....	N.....	N.....	7.9	10.8	9.8	9.5	North...	4	3	10	.....	.06
.739	.630	.644	.671	NW....	NE....	N.....	5.1	3.5	4.6	3.7	N. 7 W.	1	3	6	.....	.....
.693	.578	.713	.661	NE....	NE....	SW....	5.9	5.4	1.7	3.0	N. 45 E.	8	5	10	.....	.....
.790	.570	.665	.642	Calm..	SE....	SE....	0.0	1.9	2.3	1.3	S. 45 E.	10	8	8	.....	.....
.693	.605	.750	.683	NW....	S.....	S.....	2.5	5.0	6.2	3.3	S. 10 W.	1	5	7	.....	.....
.780	.647	.663	.697	W.....	NW....	N. NW.	5.3	14.3	23.0	13.3	N. 38 W.	9	8	10	.....	.....
.648	.544	.541	.578	N.....	N.....	N.....	16.0	17.0	14.7	15.9	North...	7	2	4	.....	.....
.751	.644	.722	.706	NW....	NE....	S.....	8.9	5.4	5.5	1.7	N. 27 W.	10	7	3	.....	.....
.788	.578	.727	.698	SW....	SE....	SE....	2.0	4.0	5.0	3.0	S. 33 E.	4	7	1	.....	.....
.701	.584	.653	.646	SE....	N.....	N.....	0.7	4.3	4.7	2.7	N. 3 E.	1	1	0	.....	.....
.732	.518	.658	.636	N. NW.	SE....	Calm..	5.6	4.5	0.0	0.7	N. 27 E.	0	7	3	.....	.....
.644	.419	.567	.543	W.....	W. NW.	W. NW.	6.4	14.1	12.1	10.7	70 W.	9	9	10	.....	.....
.721	.650	.757	.709	S.....	S.....	S.....	8.4	10.6	7.8	8.9	South...	10	7	8	.....	.....
.641	.615	.675	.644	NW....	N.....	N.....	2.0	5.4	6.7	4.3	5 W.	8	7	7	.....	.....
.721	.668	.727	.705	N.....	SE....	E.....	5.0	4.2	2.9	2.0	170 E.	9	10	9	.....	.....
.697	.582	.686	.655	NE....	NE....	Calm..	5.8	7.2	0.0	4.3	N. 5 E.	1	1	4	.....	.....
.670	.525	.692	.629	N. NW.	N.....	N.....	4.0	8.0	5.4	6.0	N. 5 W.	1	7	10	.....	.....
.822	.802	.772	.799	S.....	SE....	SE....	1.0	3.7	5.8	3.3	S. 40 E.	10	10	10	.....	.....
.970	.674	.772	.805	SE....	W.....	NW....	10.4	9.7	14.9	4.3	N. 75 W.	10	10	10	.....	.95
.755	.534	.719	.669	NW....	NE....	Calm..	15.6	6.0	0.0	5.7	N. 24 W.	0	9	5	.....	.....
.807	.706	.788	.767	E.....	S.....	S.....	1.4	7.4	9.4	5.7	S. 5 E.	2	8	10	.....	.....
.783	.702	.767	.751	W. NW.	S.....	N.....	4.2	3.4	4.1	1.3	N. 57 W.	1	10	10	.....	.....
.798	.606	.712	.705	NW....	N.....	N.....	6.9	11.4	11.2	9.3	N. 9 W.	10	3	0	.....	.....
.703	.647	.732	.694	E. SE.	SE....	SE....	6.9	6.9	5.4	6.3	S. 53 E.	1	0	1	.....	.....
.825	.688	.774	.762	SW....	S.....	S.....	6.8	11.1	11.1	9.3	S. 9 W.	0	0	0	.....	.....
.759	.631	.713	.701	.....	.....	.....	.....	.....	.....	1.5	N. 24 W.	6.0	6.1	6.8	.....	1.72
.858	.677	.763	.766	S.....	S. SE.	SE....	3.1	6.4	5.5	4.7	S. 26 E.	0	0	0	.....	.....
.867	.696	.816	.793	S.....	S.....	S.....	2.3	8.5	7.5	6.1	South...	4	9	3	.....	.....
.966	.656	.706	.743	S.....	NW....	N.....	8.5	10.0	6.8	3.0	N. 53 W.	9	10	5	.....	.....
.876	.630	.692	.733	N.....	N.....	Calm..	5.4	7.3	0.0	4.2	North...	9	5	0	.....	.....
.828	.599	.701	.709	N.....	N.....	Calm..	2.2	4.3	0.0	2.2	North...	3	7	8	.....	.....
.941	.842	.879	.887	E. SE.	NE....	N.....	6.5	12.2	15.0	9.0	N. 36 E.	10	10	10	.....	1.24
.819	.621	.718	.719	NW....	N.....	Calm..	21.5	7.6	0.0	9.0	N. 34 W.	8	7	1	.....	.04
.828	.657	.806	.764	Calm..	S.....	S.....	0.0	3.0	5.4	2.8	South...	3	6	1	.....	.....
.888	.792	.941	.874	S.....	S.....	S.....	5.9	10.0	10.0	8.6	South...	10	10	10	.....	.....
.892	.648	.739	.760	NW....	N. NW.	N.....	2.7	11.7	12.1	8.3	N. 15 W.	5	5	1	.....	.50
.630	.412	.617	.553	N. NE.	N.....	N.....	12.8	14.6	6.2	11.0	N. 8 E.	1	0	0	.....	.....
.763	.525	.712	.667	Calm..	SE....	S.....	0.0	2.7	5.5	2.7	S. 14 E.	0	0	2	.....	.....
.713	.563	.685	.654	SW....	S.....	SE....	4.9	2.8	4.8	3.1	South...	0	0	0	.....	.....
.861	.608	.688	.719	Calm..	SE....	SE....	0.0	2.0	3.9	2.0	S. 45 E.	0	0	0	.....	.....
.808	.613	.703	.708	NW....	N.....	N.....	1.3	5.7	16.3	7.3	N. 2 W.	0	8	5	.....	.....
.547	.441	.620	.549	NE....	N.....	N.....	15.8	10.2	2.2	8.7	N. 26 E.	8	0	0	.....	.....
.839	.505	.692	.679	Calm..	SE....	S.....	0.0	1.1	6.6	2.3	S. 6 E.	0	0	1	.....	.....
.673	.590	.738	.667	SW....	S.....	Calm..	5.8	3.6	0.0	3.0	S. 31 W.	8	6	3	.....	.....
.780	.559	.729	.689	NW....	SE....	SE....	2.3	3.2	3.5	1.7	S. 45 E.	5	5	4	.....	.....
.865	.851	.863	.860	W.....	S.....	N.....	6.5	6.6	4.1	2.3	S. 69 W.	10	10	10	.....	.....
.877	.689	.698	.755	N. NW.	N.....	N.....	5.4	6.1	6.5	5.0	N. 19 W.	10	10	5	.....	1.25
.623	.511	.577	.570	E.....	N.....	N.....	11.6	11.8	11.1	8.3	N. 28 E.	5	4	0	.....	.....
.584	.519	.617	.573	N. NE.	N.....	N.....	8.6	8.9	8.2	8.7	N. 7 E.	8	2	0	.....	.....
.794	.557	.716	.689	NW....	S.....	Calm..	2.3	5.0	0.0	1.3	S. 23 W.	7	6	0	.....	.....
.703	.514	.695	.637	W.....	S.....	S.....	7.9	6.1	1.2	5.7	S. 46 W.	2	1	0	.....	.....
.757	.595	.693	.642	SW....	W. NW.	N.....	7.0	6.3	11.0	4.7	N. 51 W.	5	5	4	.....	.....
.734	.547	.725	.669	N.....	NE....	N.....	5.5	5.6	3.7	4.7	N. 16 E.	10	6	2	.....	.....
.786	.563	.647	.665	SE....	SE....	E.....	1.9	5.5	5.0	3.8	S. 63 E.	8	3	1	.....	.....
.822	.704	.830	.785	S.....	SE....	E. SE.	3.4	5.4	5.1	4.3	S. 42 E.	10	10	6	.....	.....
.889	.706	.793	.796	S.....	S.....	S.....	3.9	7.6	10.4	7.3	South...	10	0	0	.....	.....
.894	.604	.768	.755	S. SW.	Calm..	Calm..	5.5	0.0	0.0	1.8	S. 23 W.	0	5	10	.....	.....
.795	.612	.728	.712	.....	.....	.....	.....	.....	.....	1.0	N. 10 E.	5.4	4.9	2.9	.....	3.03

*Reductions of the monthly meteorological register of the survey of*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.				Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.			
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.
1865.																		
Sept. 1	29.654	29.447	29.428	29.510	63.0	68.0	61.5	65.5	77.5	67.0	70.0	70.0	80.0	60.0	.542	.557	.472	.524
2	29.379	29.322	29.293	29.331	62.0	69.0	63.0	65.0	78.0	68.0	70.3	70.3	80.5	60.5	.516	.548	.509	.528
3	29.297	29.304	29.337	29.313	66.0	70.0	65.5	68.5	77.0	69.0	71.5	71.5	80.5	60.0	.606	.639	.581	.608
4	29.353	29.274	29.297	29.308	68.0	72.0	65.0	70.0	78.5	68.0	72.2	72.2	81.0	65.5	.658	.697	.577	.644
5	29.389	29.388	29.316	29.364	60.0	65.0	63.0	62.0	74.0	67.0	67.7	67.7	76.5	58.0	.491	.497	.522	.503
6	29.279	29.220	29.267	29.255	58.5	68.5	62.0	63.5	76.0	66.5	68.7	68.7	79.0	60.0	.424	.596	.496	.503
7	29.366	29.369	29.355	29.363	59.5	65.0	60.0	62.0	73.0	65.0	66.7	66.7	76.5	57.0	.476	.510	.451	.474
8	29.261	29.190	29.227	29.226	61.0	58.0	58.5	63.0	59.0	59.5	60.5	60.5	67.0	56.0	.510	.469	.479	.483
9	29.322	29.387	29.429	29.379	58.0	59.0	58.0	58.5	61.5	60.0	60.0	60.0	65.5	55.0	.476	.467	.456	.466
10	29.401	29.258	29.171	29.277	62.0	67.5	64.5	63.5	72.0	67.0	67.5	67.5	75.0	55.5	.539	.613	.573	.573
11	29.310	29.320	29.327	29.319	56.0	67.0	60.0	59.0	76.5	68.0	67.8	67.8	80.5	55.5	.409	.534	.411	.451
12	29.420	29.482	29.466	29.456	57.0	67.5	63.0	60.0	75.0	66.5	67.5	67.5	80.0	56.0	.426	.573	.529	.502
13	29.503	29.504	29.541	29.516	64.5	69.0	64.5	67.0	74.0	67.5	69.5	69.5	77.0	62.0	.573	.614	.566	.584
14	29.451	29.430	29.568	29.483	65.5	72.5	59.5	66.5	76.5	62.5	68.5	68.5	79.0	59.5	.615	.744	.469	.609
15	29.690	29.700	29.675	29.688	54.0	62.5	61.5	56.0	70.0	65.0	63.7	63.7	73.0	52.0	.391	.466	.499	.452
16	29.617	29.400	29.356	29.458	59.0	65.0	64.0	61.0	73.0	67.0	67.0	67.0	76.0	66.5	.473	.510	.556	.513
17	29.346	29.459	29.537	29.447	63.0	55.0	51.0	64.5	56.0	54.0	58.2	58.2	70.0	51.0	.556	.420	.335	.437
18	29.633	29.679	29.671	29.661	46.5	50.0	43.0	50.5	58.5	46.5	51.8	51.8	62.0	44.0	.264	.249	.232	.248
19	29.655	29.565	29.534	29.585	48.5	63.0	58.0	52.0	70.0	62.0	61.3	61.3	76.5	41.5	.296	.422	.429	.402
20	29.517	29.454	29.443	29.471	58.0	63.0	58.0	59.0	70.0	62.0	63.7	63.7	73.0	55.5	.409	.422	.429	.410
21	29.479	29.481	29.527	29.496	58.0	63.0	60.0	60.0	65.0	62.0	62.3	62.3	68.5	56.5	.456	.549	.491	.498
22	29.537	29.587	29.583	29.569	59.5	64.5	61.0	61.0	68.5	63.5	64.3	64.3	72.0	57.0	.429	.553	.503	.512
23	29.564	29.497	29.475	29.512	60.0	67.0	62.5	61.5	72.0	66.0	66.5	66.5	76.0	58.0	.498	.595	.519	.537
24	29.386	29.238	29.284	29.303	62.5	66.5	61.5	64.5	72.0	65.0	67.2	67.2	74.0	60.5	.539	.577	.490	.533
25	29.425	29.507	29.560	29.497	54.0	59.0	53.5	56.5	56.5	58.0	60.0	60.0	68.5	55.0	.385	.413	.350	.380
26	29.643	29.650	29.629	29.641	51.5	61.5	56.5	54.5	70.0	61.0	61.8	61.8	73.5	50.0	.342	.414	.397	.344
27	29.689	29.665	29.663	29.672	55.0	63.0	56.5	57.5	69.5	60.0	62.3	62.3	72.0	53.0	.400	.489	.411	.433
28	29.624	29.562	29.504	29.563	60.0	64.5	61.0	62.0	69.0	64.5	65.2	65.2	71.5	54.0	.491	.546	.490	.508
29	29.376	29.288	29.344	29.336	63.0	64.5	56.5	64.5	67.5	59.5	63.8	63.8	70.5	56.5	.556	.566	.417	.466
30	29.287	29.176	29.248	29.237	51.5	55.0	48.5	51.5	63.0	53.0	58.8	58.8	65.5	50.0	.341	.327	.222	.317
Means....	29.462	29.427	29.438	29.442	.....	.....	.....	61.1	70.2	63.0	64.8	.....	.....	.....	.471	.524	.471	.495
Oct. 1	29.142	29.150	29.215	29.169	48.5	49.5	40.5	51.0	56.0	45.5	50.8	50.8	58.5	41.0	.302	.268	.187	.254
2	29.282	29.335	29.383	29.333	41.5	45.5	42.0	43.5	51.0	46.0	46.8	46.8	53.5	39.0	.236	.233	.215	.228
3	29.372	29.380	29.366	29.373	40.5	41.5	39.0	43.0	49.0	44.0	45.3	45.3	51.0	39.0	.230	.164	.173	.181
4	29.428	29.450	29.456	29.445	40.5	47.5	45.0	44.0	51.0	48.5	47.8	47.8	56.5	40.0	.207	.283	.253	.246
5	29.543	29.559	29.601	29.568	43.0	52.5	44.5	46.0	58.0	48.0	50.7	50.7	62.0	41.0	.238	.322	.246	.262
6	29.616	29.521	29.412	29.516	45.0	59.5	54.0	48.0	64.5	57.0	56.5	56.5	67.0	41.5	.260	.442	.378	.380
7	29.337	29.318	29.375	29.343	57.5	61.5	51.5	59.5	63.0	52.5	58.3	58.3	65.0	50.0	.447	.527	.362	.447
8	29.455	29.411	29.363	29.409	48.0	54.5	50.0	49.0	56.0	53.0	52.7	52.7	58.0	44.5	.322	.406	.321	.350
9	29.279	29.195	29.258	29.244	52.5	65.5	58.0	55.0	70.0	61.0	62.0	62.0	72.5	49.5	.362	.507	.443	.437
10	29.385	29.413	29.494	29.431	55.0	63.0	52.0	56.0	57.0	55.0	59.3	59.3	60.5	52.0	.420	.522	.349	.430
11	29.451	29.283	29.385	29.373	53.5	62.0	50.5	56.0	67.0	53.0	58.7	58.7	69.5	50.0	.377	.489	.340	.445
12	29.559	29.582	29.611	29.584	41.5	45.0	39.5	44.0	49.0	43.0	45.3	45.3	55.5	40.0	.229	.247	.197	.211
13	29.556	29.467	29.408	29.477	43.5	50.0	40.5	46.0	55.0	43.5	48.2	48.2	57.5	38.5	.250	.295	.213	.254
14	29.226	29.130	29.148	29.168	44.0	53.0	45.5	46.5	57.0	48.0	50.5	50.5	59.5	40.0	.255	.350	.272	.285
15	29.263	29.326	29.419	29.336	39.0	39.5	38.5	41.5	44.0	41.5	42.3	42.3	50.5	38.0	.206	.184	.195	.195
16	29.491	29.480	29.497	29.489	36.5	47.5	36.5	39.0	52.5	40.0	43.8	43.8	56.0	35.5	.183	.263	.170	.205
17	29.401	29.322	29.267	29.330	43.5	48.5	44.5	46.5	53.0	47.5	49.0	49.0	56.0	37.5	.243	.282	.255	.260
18	29.134	29.058	29.038	29.077	47.0	49.5	50.0	49.5	51.0	52.0	50.8	50.8	54.5	43.0	.290	.334	.334	.312
19	28.837	28.658	28.776	28.757	47.5	47.0	41.5	49.5	51.0	45.0	48.5	48.5	54.0	41.5	.296	.270	.216	.261
20	28.905	29.006	29.131	29.014	38.0	42.5	37.5	41.0	47.5	40.5	43.0	43.0	50.5	37.5	.190	.207	.185	.194
21	29.311	29.424	29.525	29.420	36.5	40.0	36.0	39.0	45.0	39.5	41.2	41.2	50.0	34.0	.183	.182	.166	.171
22	29.531	29.413	29.462	29.469	38.5	41.5	39.5	41.0	46.0	42.5	43.2	43.2	48.5	32.5	.201	.203	.204	.203
23	29.602	29.706	29.739	29.682	35.5	39.0	34.0	38.5	44.0	37.5	40.0	40.0	47.0	34.5	.169	.173	.151	.164
24	29.815	29.803	29.769	29.796	34.5	42.5	31.5	37.5	48.0	35.5	40.3	40.3	51.5	32.0	.161	.200	.132	.164
25	29.670	29.605	29.516	29.597	35.5	46.0	58.0	39.0	50.0	40.0	43.0	43.0	52.5	30.0	.162	.232	.203	.202
26	29.430	29.456	29.510	29.475	34.5	36.5	32.5	35.5	38.5	35.0	36.3	36.3	42.5	31.0	.187	.190	.152	.176
27	29.628	29.517	29.396	29.514	30.0	34.5	34.5	32.5	39.0	38.0	36.5	36.5	42.0	29.0	.138	.141	.154	.144
28	29.240	29.242	29.317	29.266	30.0	32.5	31.0	32.0	37.0	34.5	34.5	34.5	40.5	38.5	.144	.136	.134	.135
29	29.453	29.499	29.585	29.512	30.0	38.5	33.5	32.5	43.0	37.0	37.5	37.5	45.5	26.5	.132	.175	.147	.133
30	29.674	29.614	29.584	29.624	30.5	40.5	38.0	33.5	45.0	41.0	39.8	39.8	48.0	30.5	.148	.194	.190	.177
31	29.476	29.520	29.614	29.537	37.5	40.5	37.5	40.5	44.5	41.5	42.2	42.2	47.0	37.5	.186	.200	.173	.186
Means....	29.403	29.382	29.408	29.398	.....	.....	.....	43.7	51.3	41.7	46.6	.....	.....	.....	.237	.274	.222	.245

*the northern and northwestern lakes, at Thunder Bay Island, Michigan.*

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.864	.591	.715	.723	S.....	Calm..	SE.....	1.1	0.0	1.9	0.9	S. 27 E.	10	0	0		
.836	.613	.743	.731	S.....	SE.....	SE.....	0.3	2.1	4.8	2.3	S. 41 E.	1	3	8		
.870	.689	.821	.793	SW....	E.....	S.....	1.5	1.7	2.4	1.3	S. 10 E.	10	10	10		
.898	.715	.843	.819	S.....	S.....	Calm..	4.8	8.5	0.0	4.4	South..	4	9	8		
.884	.593	.790	.756	NW....	S.....	S.....	4.1	4.6	8.8	3.7	S. 15 W.	3	7	10		.54
.725	.664	.793	.727	W.....	SW....	Calm..	6.2	8.0	0.0	4.3	S. 66 W.	0	4	5		
.856	.629	.731	.739	N.....	SE.....	E.....	0.8	4.1	4.2	2.5	S. 73 E.	3	8	10		
.826	.939	.940	.922	E. SE..	E. SE..	E. SE..	7.8	24.6	24.9	19.0	S. 68 E.	10	10	10		.18
.969	.855	.880	.901	E.....	N.....	N.....	10.4	4.8	3.3	4.3	N. 51 E.	10	10	10		1.86
.915	.782	.867	.855	S.....	S.....	S.....	2.3	2.1	10.0	6.8	South..	10	6	10		
.819	.586	.601	.669	W. NW	SW....	W.....	8.8	6.6	7.5	7.0	S. 86 W.	0	0	0		.25
.822	.660	.814	.765	Calm..	S.....	S.....	0.0	2.1	3.9	2.0	South..	4	3	4		
.867	.764	.842	.824	S.....	S.....	S.....	6.0	5.8	4.5	5.4	South..	9	10	10		
.946	.816	.830	.864	S.....	N.....	N.....	2.6	10.4	8.2	5.3	North..	10	10	1		.18
.872	.634	.810	.772	NW....	Calm..	Calm..	5.3	0.0	0.0	1.7	N. 45 W.	0	7	0		
.882	.629	.841	.784	S.....	S.....	S.....	3.5	10.3	11.9	8.6	South..	7	4	0		
.916	.035	.802	.884	W.....	NE.....	NE.....	3.0	7.3	12.1	5.7	N. 32 E.	10	10	2		.91
.718	.506	.732	.652	NE.....	N.....	N.....	5.3	13.0	7.0	8.0	N. 9 E.	10	1	0		.27
.761	.658	.772	.730	SW....	S.....	S.....	2.8	3.8	8.8	5.0	S. 7 W.	0	1	1		
.819	.658	.772	.750	S.....	S.....	S.....	7.8	8.1	8.8	7.7	S. 13 W.	7	3	2		
.880	.890	.884	.885	SW....	S.....	Calm..	5.4	3.5	0.0	2.7	S. 27 W.	10	10	10		.26
.911	.795	.859	.855	Calm..	E. SE..	E. SE..	0.0	1.3	3.2	1.5	S. 67 E.	10	10	10		.16
.912	.758	.813	.828	Calm..	S.....	S.....	0.0	3.5	8.7	4.1	South..	10	8	2		
.829	.735	.810	.811	SW....	SW....	NW....	5.4	6.5	8.9	5.0	S. 81 W.	9	7	5		
.842	.658	.727	.742	NW....	N.....	N.....	7.3	11.4	7.5	8.3	N. 12 W.	1	2	0		.16
.803	.584	.741	.713	SE.....	SE.....	SE.....	6.3	7.9	6.8	7.0	S. 45 E.	0	4	0		
.844	.678	.793	.772	S.....	S.....	S.....	5.5	10.8	9.2	8.5	South..	1	3	0		
.884	.772	.808	.821	S.....	S.....	S.....	6.2	8.5	10.2	8.3	South..	8	10	3		
.916	.842	.820	.859	S. SW..	W.....	NW....	10.6	14.8	14.1	9.3	N. 89½ W.	8	10	10		
.803	.568	.699	.690	W. NW	W. NW	W. NW	13.3	15.3	14.6	14.3	N. 68 W.	3	10	10		.21
.860	.706	.796	.787	.....	.....	.....	.....	.....	.....	1.7	S. 10 W.	5.9	6.3	5.0		4.98
.824	.598	.612	.678	NW....	NW....	NW....	9.9	10.6	11.9	10.7	N. 45 W.	3	6	10		.05
.835	.622	.691	.716	NW....	NW....	NW....	11.6	13.9	12.4	12.7	N. 45 W.	10	10	10		
.792	.472	.597	.620	NW....	N.....	N. NE.	10.5	11.4	14.1	10.7	N. 4 W.	8	8	10		
.717	.756	.743	.739	N.....	N.....	N. NE.	11.2	13.7	11.2	12.0	N. 7 E.	7	8	10		
.767	.669	.740	.725	NE.....	N.....	N.....	9.1	8.5	8.4	8.0	N. 15 E.	10	0	0		
.777	.729	.812	.773	W.....	S.....	S.....	11.9	11.3	13.8	9.3	S. 22 W.	0	6	0		
.879	.914	.931	.908	Calm..	Calm..	E.....	0.0	0.0	6.0	2.0	East....	10	10	10		
.926	.903	.798	.876	Calm..	Calm..	S. SW..	0.0	0.0	7.9	2.7	S. 23 W.	10	10	5		.58
.838	.775	.825	.813	S. SW..	W.....	NW....	10.1	6.9	3.2	5.0	S. 61 W.	6	5	0		
.935	.790	.805	.843	Calm..	E.....	E.....	0.0	7.9	13.2	7.0	East....	2	8	10		
.841	.740	.863	.815	SE.....	N.....	N.....	9.5	7.5	8.6	3.7	N. 35 E.	7	10	10		
.796	.710	.710	.739	NE.....	NE.....	E.....	12.8	9.1	5.7	9.0	N. 54 E.	10	9	8		.12
.805	.681	.753	.746	SE.....	Calm..	S.....	5.1	0.0	2.9	2.5	S. 29 E.	8	8	0		
.807	.752	.813	.791	W. NW	Calm..	NE.....	6.8	0.0	2.2	2.0	N. 42 W.	4	10	0		
.784	.637	.741	.721	NE.....	NE.....	N.....	23.3	24.9	27.2	23.3	N. 29 E.	10	10	10		.42
.771	.663	.689	.708	NW....	N.....	NW....	14.9	9.5	1.9	8.7	N. 27 W.	10	6	0		
.770	.699	.775	.748	SW....	S.....	SE.....	9.3	13.6	16.2	10.7	S. 9 E.	8	10	10		
.819	.894	.761	.858	S. SE..	S. SE..	SE.....	17.7	15.8	11.5	14.7	S. 27 E.	10	10	10		
.821	.722	.723	.755	NW....	N. NW..	N.....	19.0	10.3	15.5	11.3	N. 18 W.	10	3	6		.12
.738	.627	.735	.701	NW....	NW....	NW....	24.8	27.3	25.0	25.7	N. 45 W.	8	8	7		
.781	.607	.685	.691	NW....	NW....	N.....	16.2	11.2	10.5	11.7	N. 34 W.	10	9	1		
.782	.653	.747	.727	W.....	W.....	W.....	10.9	10.1	11.1	10.7	West....	10	7	8		
.722	.597	.669	.661	NE.....	N.....	N.....	12.5	10.1	9.4	10.0	N. 17 E.	7	1	3		
.715	.598	.634	.619	E.....	E.....	Calm..	9.4	7.7	0.0	5.7	East....	7	1	4		
.681	.716	.820	.739	SE.....	SE.....	E.....	1.8	0.8	7.3	3.1	S. 79 E.	8	10	10		
.899	.813	.747	.820	E.....	E. SE..	E. SE..	12.4	26.6	25.5	21.3	S. 72 E.	10	10	8		.30
.748	.591	.673	.771	E.....	E.....	E.....	19.8	14.3	13.0	15.7	East....	8	6	10		.32
.794	.573	.669	.679	NE.....	N.....	NW....	22.4	14.1	15.5	13.7	N. 7 E.	10	8	4		.26
.748	.628	.665	.680	W. NW	N.....	W. NW	10.5	9.2	8.5	8.0	N. 46 W.	4	5	10		
.797	.646	.738	.727	W. NW	SW....	W. NW	8.2	8.0	8.0	6.7	N. 88 W.	8	7	10		
.735	.680	.657	.691	W. SW..	W.....	W.....	6.9	6.1	10.5	7.7	S. 83 W.	10	8	10		
.795	.692	.772	.753	.....	.....	.....	.....	.....	.....	3.3	N. 0½ E.	7.8	7.3	6.6		2.17

Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.								VAPOUR.				
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.			
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.			Mean.			
1865.					o	o	o	o	o	o	o	o	o				
Nov. 1	29.637	29.465	29.251	29.451	38.0	40.0	43.0	40.5	45.0	45.5	43.7	48.0	37.0	.196	.182	.245	.227
2	29.181	29.312	29.456	29.316	40.5	44.5	38.5	42.5	47.5	41.0	43.7	50.0	37.0	.226	.254	.200	.227
3	29.437	29.283	29.223	29.314	38.0	42.5	39.5	40.5	48.5	42.0	43.7	51.0	36.5	.196	.194	.210	.200
4	29.116	29.115	29.192	29.141	39.0	38.5	30.0	40.5	40.5	32.5	37.8	44.0	29.5	.219	.164	.132	.174
5	29.378	29.440	29.353	29.390	26.5	30.5	31.0	29.0	35.0	34.0	32.7	37.5	25.0	.115	.112	.139	.128
6	28.957	29.093	29.481	29.178	33.5	32.5	27.0	36.0	36.5	31.5	34.7	42.0	28.5	.160	.132	.131	.141
7	29.749	29.781	29.670	29.733	22.5	29.0	32.0	25.0	33.0	35.5	31.2	38.0	20.0	.091	.114	.136	.114
8	29.450	29.285	29.434	29.390	37.0	44.0	38.5	40.0	50.0	41.5	43.8	54.0	33.0	.181	.202	.194	.195
9	29.620	29.790	29.894	29.768	32.5	33.5	30.5	35.5	38.0	34.0	35.8	44.0	31.0	.145	.133	.130	.136
10	30.011	30.036	30.070	30.039	28.5	29.5	28.5	32.0	34.0	31.5	32.5	37.0	29.0	.116	.111	.122	.116
11	29.998	29.875	29.823	29.899	29.5	36.0	34.0	32.5	40.5	38.0	37.0	43.0	27.0	.129	.153	.144	.142
12	29.661	29.542	29.498	29.567	36.5	44.5	41.5	39.5	49.5	45.5	44.8	52.0	33.5	.177	.222	.210	.205
13	29.419	29.297	29.253	29.323	40.5	51.0	43.5	43.5	57.0	47.5	49.3	60.5	40.0	.213	.295	.230	.246
14	29.200	29.136	29.134	29.190	41.5	51.0	45.0	44.0	56.0	49.0	49.7	60.5	41.0	.229	.302	.247	.26
15	29.162	29.168	29.236	29.189	44.0	47.5	44.5	46.5	52.5	47.0	48.7	55.0	43.5	.255	.263	.260	.258
16	29.197	29.072	28.996	29.088	43.0	47.5	47.0	44.5	50.0	50.0	48.2	56.0	41.0	.252	.296	.283	.279
17	28.977	29.283	29.478	29.246	46.0	39.0	34.0	49.5	43.0	37.0	43.2	53.0	34.0	.265	.186	.157	.205
18	29.557	29.529	29.512	29.533	34.0	34.5	33.5	37.5	39.5	37.0	38.0	42.0	31.5	.150	.135	.146	.144
19	29.540	29.513	29.506	29.520	36.5	43.0	41.5	39.5	49.0	44.5	44.3	52.0	32.0	.177	.199	.223	.200
20	29.392	29.304	29.301	29.332	40.0	41.5	42.0	42.5	45.5	44.5	44.0	48.0	39.0	.215	.216	.234	.222
21	29.301	29.283	29.300	29.261	39.5	40.5	37.5	41.0	42.0	39.5	40.8	47.0	36.5	.223	.232	.198	.215
22	29.150	29.093	29.180	29.141	35.0	34.0	34.0	37.5	38.0	37.5	37.7	41.5	34.0	.171	.144	.150	.155
23	29.305	29.361	29.424	29.363	34.5	34.5	35.0	37.5	38.5	38.0	38.0	41.0	34.0	.161	.148	.165	.156
24	29.484	29.438	29.393	29.438	35.5	39.0	39.0	38.0	42.0	41.5	40.5	45.5	35.0	.175	.199	.206	.195
25	29.382	29.433	29.513	29.443	33.0	41.0	34.0	35.0	46.0	37.0	39.3	48.0	32.0	.162	.192	.157	.172
26	29.521	29.460	29.414	29.465	29.0	43.5	34.0	31.0	48.0	37.5	38.8	51.5	27.5	.137	.224	.150	.179
27	29.398	29.528	29.598	29.508	29.5	30.5	29.0	32.0	36.0	32.5	33.5	39.5	29.0	.134	.107	.120	.130
28	29.586	29.552	29.473	29.537	27.0	30.5	31.0	29.5	34.5	34.5	32.8	37.0	23.0	.118	.124	.134	.125
29	29.360	29.300	.....	29.330	33.0	35.0	.....	35.0	39.5	.....	37.2	.....	.....	.162	.145	.....	.153
30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Means....	29.418	29.406	29.430	29.414	.....	.....	.....	37.8	43.3	39.5	40.2	.....	.....	.178	.186	.181	.181



is northern and northwestern lakes, at Thunder Bay Island, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.779	.607	.803	.730	W.....	S.....	SE.....	9.2	6.0	8.7	4.1	S. 15 W.	10	10	10		
.831	.775	.781	.796	W. NW.	W. NW.	W.....	9.9	7.8	6.2	7.7	N. 74 W.	8	8	4		.19
.779	.567	.786	.711	W.....	S. SW.	S. SW..	8.9	10.1	12.6	9.0	S. 40 W.	10	3	10		
.866	.649	.748	.754	S. SW..	NW....	NW....	10.9	5.7	6.5	4.2	S. 84 W.	10	5	10		.10
.720	.582	.712	.671	N. NW.	NW....	W.....	21.4	14.3	8.6	13.3	N. 42 W.	10	7	5		.10
.753	.614	.740	.702	W. SW.	W. NW.	N. NW.	14.4	25.7	27.8	18.7	N. 58 W.	10	10	10		
.684	.506	.653	.648	N. NW	S.....	S.....	11.0	3.9	8.3	1.5	S. 64 W.	10	10	10		
.732	.581	.742	.685	S. SW..	SW....	NW....	17.2	21.7	6.1	12.5	S. 44 W.	10	10	3		
.701	.581	.664	.649	N. NW.	N.....	NE....	7.7	6.8	6.0	6.1	N. 4 E.	10	5	8		
.644	.570	.629	.634	NE....	E.....	E. SE..	5.5	5.8	7.4	5.5	N. 86 E.	10	8	5		
.698	.605	.628	.644	S.....	S.....	S.....	7.6	9.7	11.8	9.7	South ..	9	9	3		
.729	.642	.687	.686	W.....	W. SW.	W.....	10.4	10.5	9.6	10.0	S. 82 W.	4	10	2		
.753	.634	.701	.696	W. NW.	W. NW.	S.....	7.4	7.7	4.7	4.6	N. 86 W.	10	9	1		
.796	.687	.713	.732	S.....	S.....	S.....	7.8	8.1	6.7	7.5	South ..	0	0	0		
.807	.663	.809	.760	SW....	SW....	S.....	7.2	6.3	6.0	6.0	S. 32 W.	10	7	2		
.878	.820	.786	.828	S.....	S.....	S.....	6.9	9.7	12.3	9.6	South ..	7	10	10		
.748	.669	.712	.710	W. NW.	NW....	NW....	11.9	15.5	10.1	12.3	N. 51 W.	10	6	3		
.689	.552	.665	.629	NE....	E. SE..	SE....	3.3	3.9	4.0	2.9	S. 78 E.	10	5	10		
.729	.572	.759	.687	S. SW..	S.....	S.....	5.6	9.6	11.4	8.7	S. 5 W.	9	3	7		
.729	.723	.798	.770	S.....	S.....	S.....	19.3	28.6	11.8	19.9	South ..	10	7	10		
.867	.871	.818	.852	E.....	E.....	NE....	3.6	8.5	10.6	7.0	N. 69 E.	10	10	10		
.762	.628	.669	.686	N.....	N. NW.	N. NW.	16.7	24.9	17.2	19.3	N. 16 W.	0	9	10		
.715	.632	.719	.689	N.....	N.....	NW....	18.5	9.2	6.2	11.0	N. 7 W.	10	10	10		
.765	.744	.784	.764	S.....	S.....	S. SW..	4.5	8.2	11.2	7.8	S. 10 W.	10	4	1		
.797	.617	.712	.709	NW....	NW....	NW....	8.8	10.4	7.1	8.8	N. 45 W.	8	5	2		
.788	.666	.689	.708	NW....	W. SW.	NW....	4.0	4.2	1.9	2.7	N. 72 W.	1	0	0		
.744	.505	.649	.633	N. NW.	N.....	NW....	9.2	6.1	13.6	9.0	N. 28 W.	4	9	10		
.725	.622	.669	.672	N. NE..	E.....	SE....	5.9	4.2	4.3	3.2	N. 76 E.	10	10	10		
.797	.595	.....	.696	E. SE..	SE....	.....	5.6	5.6	.....	5.4	S. 56 E.	9	10	.....		
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....		
.760	.641	.724	.708	.....	.....	.....	.....	.....	.....	8.6	S. 84 W.	8.4	7.2	6.3	.....	.....



Reductions of the monthly meteorological register of the survey.

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1865.					°	°	°	°	°	°	°	°	°					
July	1	29.237	29.181	29.152	29.190	61.5	62.0	63.5	65.0	66.0	67.0	66.0	71.0	59.0	499	502	500	500
	2	29.293	29.298	29.363	29.318	56.0	61.5	65.5	58.5	66.0	70.0	64.8	72.0	55.5	416	467	561	495
	3	29.388	29.243	29.359	29.330	56.5	62.0	66.0	59.0	66.0	70.0	65.0	71.0	55.0	421	502	546	545
	4	29.480			29.481	60.0			62.5			62.5			483			475
	5		29.589	29.549	29.569	54.0	57.5	55.0	57.5	60.5	61.0	59.7	62.0	55.0	419	434	434	428
	6		29.259	29.257	29.258		70.0	76.5		74.0	83.0	78.5	83.0	58.0		679	724	724
	7	29.461	29.433	29.438	29.444	65.0	65.0	63.0	70.0	71.0	67.0	69.3	83.0	68.0	550	537	522	530
	8	29.461	29.338	29.377	29.392	62.0	64.0	66.0	66.0	69.0	70.5	68.5	72.0	63.0	502	529	576	571
	9	29.593	29.609	29.554	29.585	56.0	59.5	56.0	62.0	64.0	61.5	62.5	71.0	57.0	369	449	576	544
	10	29.474	29.248	29.274	29.349	56.0	59.5	58.0	59.5	65.0	62.0	62.2	66.5	52.0	419	429	429	424
	11	29.348	29.288	29.258	29.298	52.0	64.0	67.5	55.0	68.5	72.0	65.2	72.5	48.0	349	536	612	460
	12	29.242	29.247	29.421	29.303	63.0	63.0	51.5	65.5	68.0	56.0	63.2	72.0	57.0	542	509	321	457
	13	29.543	29.545	29.553	29.547	48.5	57.0	57.5	51.0	61.5	60.0	57.5	62.0	48.5	308	406	440	384
	14	29.439	29.393	29.441	29.424	53.0	60.5	61.5	55.0	64.0	64.0	61.0	65.0	49.0	376	480	512	400
	15	29.574	29.492	29.451	29.506	42.0	55.0	57.0	45.0	61.5	61.5	56.0	63.0	43.0	228	347	359	280
	16		29.348	29.347	29.347		57.5	61.0		66.0	66.5	66.2	67.0	46.0		361	463	412
	17	29.394	29.298	29.280	29.324	50.0	63.0	59.5	52.5	68.5	66.0	62.3	73.0	50.0	328	502	421	415
	18	29.199	29.137	29.228	29.188	58.0	68.5	64.0	66.0	76.0	73.0	71.7	78.0	53.5	376	596	476	480
	19	29.093	29.018	29.092	29.068	57.0	65.0	65.0	61.0	71.5	70.0	67.5	79.0	56.0	412	530	550	465
	20	29.241	29.277	29.366	29.295	59.0	66.0	60.0	63.0	71.0	64.0	66.0	73.0	59.0	447	572	465	480
	21	29.508	29.498	29.480	29.495	57.0	60.0	56.0	60.5	63.0	60.0	61.2	66.0	58.0	419	478	396	411
	22	29.605	29.618	29.634	29.619	57.5	60.5	60.0	61.0	65.5	63.0	63.2	66.0	57.0	427	460	472	450
	23	29.606	29.516	29.486	29.536	60.5	65.0	64.0	67.0	69.5	68.5	68.3	70.0	57.0	440	557	536	511
	24	29.461	29.408	29.226	29.365	54.5	60.5	59.0	59.0	63.0	62.0	61.3	65.5	58.0	424	494	460	450
	25	29.061	28.996	29.148	29.068	63.5	66.0	60.5	68.0	70.0	64.5	67.5	71.0	60.5	594	586	474	520
	26	29.239	29.277	29.295	29.270	57.5	68.0	68.0	61.0	77.0	74.0	70.7	80.0	59.0	427	564	604	520
	27	29.272	29.227	29.250	29.250	64.5	70.0	68.5	69.0	74.0	72.0	71.7	71.0	61.0	546	679	636	620
	28	29.283	29.252	29.290	29.275	63.0	68.0	63.0	68.0	71.0	67.0	68.7	70.0	63.0	509	644	522	520
	29	29.484	29.521	29.544	29.523	52.5	57.0	53.0	56.5	61.5	57.0	58.3	69.0	54.5	342	406	350	360
	30	29.704	29.639	29.642	29.662	51.0	57.5	58.0	54.0	62.0	62.5	59.5	64.0	40.5	335	414	423	341
	31	29.665	29.628	29.590	29.628	56.0	67.5	70.0	58.0	71.5	73.0	67.5	74.0	52.0	422	619	623	570
Means...		29.405	29.362	29.379	29.384	....	....	....	61.9	67.5	66.3	61.7	....	....	425	509	501	480
		*	†	†					†	†	†				†	†	†	
August	1	29.687	29.642	29.617	29.649	51.0	54.5	56.5	54.0	69.0	68.0	63.7	72.5	49.0	335	233	304	291
	2	29.592	29.514	29.525	29.544	66.0	73.0	74.0	68.5	77.5	78.0	74.7	80.0	63.0	626	751	785	714
	3	29.448	29.533	29.561	29.514	70.5	69.0	65.0	73.0	73.0	68.0	71.3	78.0	67.0	711	655	577	620
	4	29.620	29.617	29.548	29.595	57.5	62.0	63.0	61.0	66.5	66.0	64.5	68.5	59.0	427	496	536	480
	5	29.609	29.561	29.497	29.556	56.0	66.0	66.0	60.0	70.0	71.0	67.0	73.0	51.0	396	586	572	540
	6	29.092	29.065	29.158	29.105	64.5	66.5	63.0	67.5	71.0	66.0	68.2	71.0	60.0	566	590	536	540
	7	29.286	29.267	29.264	29.272	56.5	65.0	65.0	59.5	70.5	69.0	66.3	75.0	58.0	417	544	564	520
	8	29.398	29.374	29.395	29.389	62.0	67.5	66.0	65.0	72.5	70.0	69.2	74.0	59.0	516	606	536	540
	9	29.435	29.252	29.202	29.296	59.0	71.0	63.0	62.5	75.5	65.0	67.7	76.0	58.0	453	696	549	560
	10	29.174	29.212	29.346	29.244	48.0	69.0	63.0	71.0	73.5	68.0	70.8	75.0	69.0	644	672	509	250
	11	29.472	29.446	29.460	29.459	54.5	57.0	53.5	59.0	63.5	58.5	60.3	69.5	65.0	365	379	343	320
	12	29.518	29.468	29.458	29.471	56.0	60.0	59.0	59.0	64.5	62.0	61.2	65.5	42.0	409	452	430	420
	13		29.460	29.448	29.454		65.0	68.5		69.0	72.0	70.5	74.0	46.0		564	630	450
	14	29.457	29.418	29.387	29.420	62.0	70.0	65.5	65.5	75.0	70.0	70.2	76.0	52.0	509	666	522	520
	15	29.391	29.351	29.443	29.395	59.0	69.0	65.0	62.0	73.5	69.0	68.2	79.0	55.0	460	642	524	520
	16	29.560	29.518	29.534	29.537	53.0	59.5	54.0	55.0	66.0	57.0	59.3	68.5	52.0	376	422	372	320
	17	29.543	29.541	29.468	29.517	47.0	62.0	63.0	49.0	67.0	67.0	61.0	68.0	43.0	297	429	392	450
	18	29.456	29.420	29.438	29.438	52.0	68.0	71.0	55.0	72.0	74.0</							

\* Mean of 28 observations.  
\* Mean of 30 observations.

† Mean of 30 observations.  
† Mean of 29 observations.

‡ Mean of 29 observations.

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*the northern and northwestern lakes, at Tawas City, Michigan.*

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely over-cast.)			Am't of evaporation in U. S. inches and decim. mm.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
810	786	816	804	E	S	NW	1.0	10.0	2.0	2.9	S. 3 W.	8	4	9		
847	561	774	727	W	W	W	14.0	18.0	2.0	11.3	West	10	8	1		20
848	726	729	808	W	S	W	6.0	16.0	2.0	6.0	S. 26 W.	10	3	7		
857			857	NW			0.3			0.3	N. 45 W.	10				
795	823	659	759	W	E	S	3.0	10.0	1.0	2.3	S. 83 E	10	10	10		20
	810	730	770		SW	W		30.0	2.0	16.0	S. 48 W.		8	8		
751	708	790	750	NW	SE	NW	8.0	6.0	0.3	0.8	N. 45 W.	10	6	10		
746	747	776	770	W	S	NW	2.0	20.0	0.3	6.7	S. 7 W.	6	2	9		
665	753	689	702	N	NE	N	8.0	13.0	4.0	7.7	N. 23 E	10	2	9		
795	682	772	750	NE	E	NW	10.0	6.0	0.3	5.0	N. 59 E	9	10	8		
805	770	722	726	NW	S	W	3.0	8.0	0.3	2.1	S. 82 W.	0	0	10		
864	743	716	774	S. SW	W	NW	13.0	20.0	18.0	12.3	N. 89 W.	8	3	1		18
824	743	851	806	NW	E	NW	8.0	12.0	0.3	2.8	N. 46 E	0	9	3		
869	806	860	845	E	E	NE	1.0	12.0	5.0	5.7	N. 79 E	1	9	10		
762	635	718	705	W	NW	NW	8.0	1.0	1.0	3.2	N. 22 W.	0	4	1		
	564	713	639		E	NW		15.0	0.3	4.7	N. 89 E		3	4		
829	721	660	737	NW	S	NW	5.0	18.0	0.3	5.0	S. 14 W.	0	8	1		
588	664	528	613	W	SW	W	24.0	13.0	0.3	11.7	S. 75 W.	1	5	0		
769	688	751	736	SW	S	NW	2.0	20.0	11.0	5.7	S. 35 W.	10	5	0		
776	754	780	770	NW	NE	N	0.3	4.0	0.3	1.4	N. 38 E	8	10	9		
795	831	765	797	N	NE	N	4.0	8.0	15.0	8.3	N. 13 E	10	10	10		16
796	753	831	787	NE	E	W	12.0	20.0	0.3	10.0	N. 74 E	1	1	9		12
666	773	770	736	S	E	N	3.0	20.0	2.0	6.7	S. 87 E	3	6	10		
848	858	828	845	N	E	NE	0.3	12.0	10.0	7.0	N. 69 E	10	10	10		24
869	799	722	817	SW	SW	W	30.0	32.0	40.0	31.3	S. 62 W.	10	5	8		51
796	608	720	708	W	NW	NW	10.0	15.0	0.3	7.7	N. 62 W.	1	6	1		10
772	810	851	811	S	S	W	1.0	15.0	1.0	5.3	S. 4 W.	8	9	8		
743	850	790	794	W	W	W	1.0	6.0	0.3	2.4	West	6	10	9		
750	743	752	748	NW	E	NW	16.0	24.0	0.3	5.7	N. 46 E	2	3	0		
802	745	748	765	E	E	E	5.0	8.0	20.0	11.0	East	0	0	0		
876	804	854	845	S	E	E	2.0	7.0	0.3	2.5	S. 75 E	0	2	4		
757	743	763	766							1.1	S. 52 W.	5.6	5.7	5.9		1.71
†	†	†										†	†	†		
802	329	445	525	SW	S	W	1.0	7.0	0.3	2.7	S. 7 W.	0	0	0		
870	797	819	829	SE	E	S	4.0	8.0	8.0	5.1	S. 45 E	2	2	9		
878	807	843	843	SW	E	NE	15.0	15.0	3.0	3.7	S. 37 E	10	10	10		
796	763	838	799	NW	NW	NW	1.0	3.0	0.3	1.4	N. 45 W.	10	10	0		18
765	799	754	773	N	NE	NE	1.0	10.0	3.0	4.7	N. 41 E	2	8	8		
842	778	838	819	SW	SW	NW	10.0	17.0	15.0	10.3	S. 74 W.	10	8	10		53
820	729	796	782	W	SW	NW	11.0	13.0	1.0	7.3	S. 67 W.	3	5	1		
836	760	799	798	S	S	W	9.0	12.0	0.3	7.0	S. 1 W.	3	2	1		
802	791	890	828	S	S	S	6.0	10.0	5.0	7.0	South	6	6	10		
850	728	743	794	W	NW	SW	6.0	18.0	2.0	7.7	N. 61 W.	8	7	9		64
731	647	700	693	N	NE	NW	15.0	24.0	10.0	13.7	N. 14 E	6	0	0		
819	755	828	801	S	E	W	3.0	15.0	0.3	5.0	S. 79 E	1	0	0		
	796	828	812		W	W		0.3	0.3	0.3	West		0	0		
811	768	774	784	S	SE	NW	1.0	2.0	0.3	0.9	S. 29 E	0	0	0		
828	786	796	803	NW	S	NW	0.3	6.0	12.0	3.0	N. 71 W.	0	5	0		
869	660	812	780	N	NE	NW	6.0	15.0	3.0	6.7	N. 25 E	8	1	0		
853	740	790	794	NW	E	E	3.0	9.0	12.0	6.3	N. 83 E	0	0	0		
805	804	856	822	SW	S	N	2.0	12.0	3.0	3.7	S. 7 W.	2	8	7		
852	716	782	783	W	S	N	0.3	3.0	1.0	0.7	S. 9 W.	0	5	9		
892	764		828	W	S		5.0	6.0		2.7	S. 39 W.	10	8			12
880	811	853	848	W	E	W	0.3	4.0	0.3	1.1	East	10	10	5		20
752	656	843	750	NE	NE	NW	15.0	18.0	0.3	11.0	N. 44 E	9	10	1		
829			829	W			0.3			0.3	West	2				
838	712	802	784	SW	S	W	11.0	30.0	0.3	12.7	S. 13 W.	5	2	0		
846	422	838	702	NW	E	W	12.0	22.0	0.3	5.3	N. 57 E	10	5	0		
780	590	719	696	SW	SW	S	10.0	20.0	3.0	10.7	S. 41 W.	6	5	5		
844	838	825	836	N	E	W	3.0	4.0	0.3	1.6	N. 51 E	10	10	7		
822	836	752	803	E	NE	NE	12.0	13.0	6.0	9.7	N. 63 E	8	10	10		
780	768	797	782	SE	NE	SE	5.0	10.0	0.3	3.7	N. 71 E	10	10	10		
843	812	771	809	NW	E	N	3.0	13.0	1.0	3.7	N. 74 E	10	10	0		
737	820	771	776	SW	S. SW	SW	6.0	7.0	12.0	8.3	S. 39 W.	3	9	9		
822	735	790	784							0.7	S. 35 E	5.4	5.5	4.2		1.67
*	*	†														

Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
Sept.	1	29.462	29.404	.....	29.433	64.5	69.0	.....	68.0	74.0	.....	71.0	.....	.....	559	641	.....	629
	2	29.326	29.280	29.253	29.286	60.5	71.0	69.5	63.0	75.0	73.0	70.3	77.0	61.0	494	704	673	624
	3	.....	29.302	29.299	29.300	.....	75.0	73.0	.....	79.5	77.0	78.2	80.0	69.5	.....	807	757	729
	4	29.345	29.259	29.282	29.295	67.0	75.0	72.5	69.0	79.0	75.5	74.5	80.0	67.0	635	814	757	735
	5	29.418	29.388	29.328	29.378	61.5	66.0	66.5	65.0	71.5	71.0	69.2	79.0	61.5	499	566	590	542
	6	29.307	29.278	29.267	29.284	55.0	67.0	70.5	57.0	73.0	73.0	68.3	77.0	56.0	407	581	624	557
	7	29.334	.....	.....	29.334	55.5	.....	.....	57.5	.....	.....	57.5	.....	.....	414	.....	.....	414
	8	29.151	29.114	29.175	29.147	67.5	62.5	59.0	68.0	65.0	64.0	65.7	68.5	51.0	666	532	433	544
	9	29.327	.....	29.393	29.360	61.5	.....	62.0	63.0	.....	65.0	64.0	68.0	60.0	526	.....	516	521
	10	29.391	29.235	29.172	29.266	64.5	71.0	73.5	67.0	74.5	77.0	72.9	78.0	60.5	573	711	778	687
	11	29.320	29.315	29.304	29.313	56.5	66.5	67.5	59.0	70.0	73.0	67.3	77.0	58.0	424	603	610	543
	12	29.485	29.473	29.430	29.463	56.5	67.0	69.5	59.0	72.5	73.0	68.2	75.0	53.0	424	588	673	589
	13	29.522	29.492	29.491	29.502	69.5	73.0	68.0	73.0	77.0	76.0	75.3	78.0	63.0	672	757	577	684
	14	29.477	29.424	29.531	29.477	69.0	75.0	73.5	71.0	72.5	76.0	75.2	83.5	69.0	682	820	792	765
	15	29.702	29.695	29.670	29.689	54.0	65.0	64.5	57.0	69.0	67.0	64.3	78.0	55.5	378	543	573	482
	16	29.588	29.509	29.472	29.523	52.0	66.5	72.5	54.5	72.0	76.0	67.5	72.0	56.0	355	577	750	567
	17	29.364	.....	29.382	29.373	69.0	.....	53.0	71.0	.....	57.5	64.2	76.0	57.5	642	.....	343	512
	18	29.600	29.644	29.650	29.631	50.0	51.0	53.5	52.5	55.0	55.0	54.2	58.5	51.0	328	321	390	346
	19	29.677	29.602	29.575	29.618	41.0	58.0	63.5	42.5	65.5	69.0	59.0	69.0	39.5	232	323	512	371
	20	29.432	29.466	29.445	29.448	51.0	63.0	64.0	52.5	67.0	67.0	62.2	70.0	39.0	354	522	556	471
	21	29.497	29.448	29.490	29.478	60.5	64.5	65.5	64.0	68.0	68.0	66.7	70.0	58.5	480	559	544	544
	22	29.497	29.582	29.582	29.554	60.0	48.5	65.0	61.0	71.0	68.0	66.7	72.0	0.0	505	663	577	562
	23	29.591	29.530	29.497	29.539	63.5	70.0	67.5	65.0	73.0	69.0	69.0	76.0	67.5	566	693	653	637
	24	29.438	29.292	29.280	29.337	67.0	70.0	71.0	68.5	73.5	74.5	72.2	75.5	67.5	642	686	711	689
	25	29.476	29.499	29.516	29.497	58.0	62.5	62.5	60.0	65.0	66.0	63.7	75.5	52.0	456	532	519	522
	26	29.676	.....	.....	29.676	50.0	.....	.....	52.0	.....	.....	52.0	.....	.....	334	.....	.....	334
	27	29.682	29.661	29.648	29.664	43.5	63.0	57.5	46.0	68.5	61.0	57.8	68.0	43.0	250	529	427	432
	28	29.627	29.564	29.541	29.577	49.0	67.0	67.5	51.0	70.0	71.0	64.0	72.0	51.0	321	622	626	523
	29	29.385	29.303	29.370	29.353	66.0	68.0	61.0	67.5	70.5	65.0	67.7	71.0	65.0	619	651	423	524
	30	29.321	29.208	29.228	29.252	52.0	56.0	55.0	52.0	60.0	57.0	56.3	62.0	52.5	388	436	477	410
Means....		29.463	29.422	29.417	29.421	.....	.....	.....	60.4	70.6	69.1	66.0	.....	.....	478	609	591	533
		*	†	†					*	†	†				*	†	†	
Oct.	1	29.163	29.101	29.219	29.161	48.0	53.0	50.5	49.5	57.0	53.0	53.2	59.0	48.0	315	350	334	333
	2	29.412	29.431	29.409	29.417	39.5	47.5	46.5	41.0	51.0	51.0	47.7	54.0	39.0	224	283	252	253
	3	29.393	29.361	29.410	29.388	38.0	43.5	42.0	39.0	49.0	45.0	44.3	53.0	37.0	216	217	229	220
	4	29.459	29.406	29.436	29.434	38.0	47.0	48.5	39.0	52.0	52.0	47.7	56.0	37.0	216	257	295	256
	5	29.547	29.547	29.596	29.563	44.0	50.0	46.0	46.0	54.0	48.0	49.3	57.0	44.0	262	302	294	286
	6	29.630	29.540	29.461	29.544	35.5	55.5	56.5	37.0	59.5	60.0	52.2	61.5	34.0	188	368	411	323
	7	29.363	29.521	29.447	29.444	56.0	62.0	63.5	57.5	64.0	65.0	62.2	66.0	55.0	429	529	552	493
	8	.....	29.404	29.372	29.288	.....	54.0	52.0	.....	56.0	52.0	54.0	66.0	51.0	.....	391	349	362
	9	29.283	29.208	29.266	29.252	55.0	65.0	63.0	56.0	70.0	67.0	64.3	72.0	43.0	361	550	522	473
	10	29.392	29.364	29.449	29.402	59.0	63.0	.....	62.5	67.5	.....	65.0	.....	.....	453	516	.....	462
	11	29.459	29.317	29.341	29.372	55.0	63.0	63.5	57.0	66.0	67.0	63.3	70.5	55.0	407	536	539	494
	12	29.543	29.543	29.587	29.558	46.0	44.5	39.0	48.0	48.0	41.0	45.7	68.0	42.0	284	242	212	266
	13	29.538	29.428	29.355	29.440	44.5	45.0	41.0	48.0	49.0	43.5	46.8	51.0	39.0	248	247	224	243
	14	29.224	29.104	29.107	29.145	31.0	49.5	46.0	34.0	52.5	47.5	44.7	54.0	32.0	139	314	291	246
	15	29.235	29.306	29.374	29.305	42.0	40.5	39.0	43.0	43.5	41.0	42.5	51.0	39.0	254	213	212	226
	16	29.500	29.469	29.464	29.478	35.0	43.5	40.0	37.0	47.0	43.0	42.3	57.0	35.0	178	238	208	206
	17	29.406	.....	29.270	29.338	36.0	.....	48.0	38.0	.....	50.0	44.0	51.0	36.0	186	.....	309	245
	18	29.031	29.029	29.036	29.032	51.0	52.0	48.0	53.5	55.0	50.0	52.8	56.0	48.0	341	349	319	333
	19	28.845	28.648	28.820	28.771	42.0	47.5	45.0	44.0	50.5	49.0	47.8	52.0	42.5	241	289	247	288
	20	28.924	29.046	29.430	29.153	38.0	42.0	36.0	39.5	45.0	40.0	41.5	49.0	37.0	210	248	160	192
	21	29.448	.....	29.465	29.457	33.0	.....	36.0	35.0	.....	38.0	36.5	48.0	33.5	162	.....	186	174
	22	29.536	29.467	29.491	29.498	34.0	40.0	41.0	35.5	43.5	43.0	40.7	47.0	32.5	176	202		

\* Mean of 29 observations.

† Mean of 26 observations.

‡ Mean of 27 observations.

the northern and northwestern lakes, at Tawas City, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity. in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.818	.764		.791	E	E		6.0	8.0		7.0	East.	9	3			
.858	.812	.830	.833	NW	E	NW	0.3	8.0	1.0	2.3	N. 83 E.	10	6	0		
	.802	.817	.809		SE	SE		10.	1.0	5.5	S. 45 E.		4	1		
.896	.822	.859	.859	S	S	W	3.0	16.0	0.3	6.3	S. 1 W.	2	6	1		
.810	.733	.778	.774	W	S	SW	4.0	9.0	2.0	4.0	S. 27 W.	3	9	10		.36
.874	.716	.790	.793	SW	S	SW	2.0	05.0	3.0	6.3	S. 11 W.	0	0	8		
.875			.875	N			0.3			0.3	North	2				
.973	.863	.727	.854	NE	NE	NE	45.0	42.0	6.0	31.0	N. 45 E.	10	10	10		1.70
.914		.836	.875	SW		N	3.0		4.0	1.5	N. 49 W.	10		10		1.42
.867	.834	.839	.847	S	S	SW	5.0	7.0	6.0	5.7	S. 11 W.	10	8	10		
.848	.823	.739	.803	W	S	SW	7.0	22.0	8.0	9.7	S. 21 W.	0	0	0		.82
.848	.737	.830	.805	S	SE	W	3.0	1.0	0.2	1.1	S. 7 E.	5	9	3		
.830	.817	.644	.764	S	E	W	2.0	3.0	0.3	1.1	S. 53 E.	8	9	10		
.899	.842	.882	.874	SW	SW	NW	4.0	4.0	0.3	2.7	S. 47 W.	6	8	3		.20
.812	.793	.867	.824	W	S	W	6.0	3.0	0.3	2.3	S. 61 W.	0	7	0		
.836	.735	.837	.803	SW	S	SW	3.0	16.0	8.0	8.3	S. 18 W.	0	0	0		
.849		.725	.808	NW		NE	6.0		41.0	13.7	N. 36 E.	10		4		.62
.829	.743	.901	.824	NE	NE	N	16.0	25.0	5.0	15.0	N. 41 E.	10	2	0		.14
.873	.609	.723	.735	SW	SW	SW	3.0	5.0	0.3	2.7	S. 45 W.	0	1	5		
.897	.790	.841	.843	SW	S	W	2.0	24.0	0.3	8.7	S. 4 W.	10	5	3		
.806	.818	.869	.831	W	S	SW	0.3	7.0	1.0	2.7	S. 7 W.	10	9	5		
.941	.874	.843	.886	NW	NE	N	0.3	3.0	2.0	1.6	N. 24 E.	10	10	10		
.916	.854	.921	.897	W	S	W	0.3	12.0	0.3	4.0	S. 3 W.	10	4	10		
.921	.832	.834	.862	SW	S. 8 W.	SW	2.0	11.0	3.0	5.3	S. 30 W.	8	5	6		
.880	.863	.812	.852	W	E	NE	8.0	13.0	3.0	2.5	N. 73 E.	3	2	0		
.861			.861	E			9.0			9.0	East.	9				
.805	.814	.796	.805	NW	SE	W	0.3	3.0	4.0	1.0	S. 49 W.	0	2	0		
.859	.848	.825	.844	W	S	W	0.3	18.0	0.3	3.0	S. 2 W.	5	8	3		
.920	.873	.783	.859	SW	S	SW	11.0	17.0	13.0	13.0	S. 27 W.	3	10	10		1.20
1.000	.936	.874	.937	SW	SW	SW	4.0	14.0	19.0	12.3	S. 45 W.	0	3	10		.19
.875	.806	.816	.833							1.7	S. 23 E.	5.6	5.4	4.9		6.65
*	†	‡										*	†	‡		
.890	.752	.830	.824	W	NW	NW	10.0	13.0	3.0	8.0	N. 62 W.	3	8	6		
.867	.756	.686	.770	Calm	N	NW	0.0	2.0	6.0	2.5	N. 34 W.	0	10	0		
.907	.635	.762	.768	NW	NW	NW	11.0	12.0	9.0	10.7	N. 45 W.	1	4	5		
.907	.660	.761	.776	NW	NW	NW	16.0	18.0	6.0	13.3	N. 45 W.	3	1	0		
.843	.738	.850	.810	NW	E	Calm	3.0	10.0	0.0	2.7	N. 75 E.	3	1	0		
.855	.763	.793	.804	W	S	S	4.0	24.0	10.0	11.7	S. 4 W.	1	0	0		
.906	.888	.865	.886	SW	SW	SW	6.0	3.0	8.0	5.7	S. 45 W.	10	10	10		
	.872	1.000	.936		SE	Calm		5.0	0.0	2.5	S. 45 E.		10	0		
.930	.751	.790	.824	S	SW	SW	2.0	16.0	22.0	13.0	S. 43 W.	4	0	1		
.802	.766		.784	W	E		4.0	6.0		10.0	East.	0	2			
.874	.838	.816	.843	W	S. 8 W.	NW	2.0	14.0	16.0	9.0	N. 78 W.	10	5	10		
.850	.740	.824	.805	NE	NE	NW	11.0	14.0	2.0	8.3	N. 40 E.	10	10	9		
.740	.710	.794	.748	E	E	Calm	4.0	3.0	0.0	2.3	East.	1	7	0		
.712	.796	.886	.798	NW	N	N	2.0	1.0	6.0	3.0	N. 9 W.	6	10	10		
.916	.753	.824	.831	NE	N	N	6.0	4.0	10.0	9.3	N. 13 E.	10	10	10		.16
.807	.735	.750	.764	NW	W	Calm	4.0	10.0	0.0	4.3	N. 78 W.	2	9	0		
.811		.856	.833	Calm		S	0.0		25.0	12.5	South	10		10		
.832	.805	.856	.831	SE	Calm	SW	13.0	0.0	2.0	4.3	S. 37 E.	10	10	10		
.836	.788	.710	.778	SW	W	NW	2.0	22.0	30.0	16.3	N. 66 W.	9	8	10		
.863	.762	.645	.757	W	W	Calm	13.0	28.0	0.0	13.7	West	8	9	0		
.797		.811	.804	W		Calm	1.0		0.0	0.5	West	3		3		
.849	.713	.833	.798	W	W	SW	2.0	2.0	3.0	0.8	S. 42 W.	10	10	10		
.802	.750	.712	.755	Calm	E	W	0.0	2.0	2.0			0	3	0		.28
.792	.750		.771	NW	NE		2.0	15.0		8.5	N. 45 E.	10	3			
.740	.756	.750	.749	NW	NE	NE	4.0	2.0	10.0	4.3	N. 26 E.	5	10	10		
.869	.820	.816	.835	NE	NE	NE	18.0	16.0	30.0	21.3	N. 45 E.	10	10	10		1.60
.898			.898	NE	NE	NE	16.0	20.0	30.0	22.0	N. 45 E.	10	10	10		
.847	.895	.837	.860	NW	NW	W	16.0	10.0	4.0	9.7	N. 50 W.	10	10	1		
.872	.729	.719	.773	W	W	Calm	18.0	1.0	0.0	6.3	West	1	10	10		
.829	.726	.816	.790	Calm	W	NW	0.0	8.0	4.0	3.7	N. 75 W.	8	10	10		
.849	.824	.867	.847	SW	W	SW	4.0	2.00	10.0	10.3	S. 72 W.	10	9	10		
.843	.767	.802	.808							2.3	N. 47 W.	5.9	7.2	5.8		2.04



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
					7 a. m.	9 p. m.	Mean.	7 a. m.	9 p. m.	Mean.	Maximum.				7 a. m.	9 p. m.	Mean.	Maximum.
1865.					o	o	o	o	o	o	o	o	o					
Nov.	1	29.626	29.450	29.226	29.434	36.0	40.5	43.0	38.0	42.0	45.0	41.6	46.0	36.0	203.	233.	251.	29
	2	29.267	29.335	29.430	29.344	41.0	43.0	41.0	44.0	45.0	43.0	44.0	48.0	41.0	218.	251.	231.	23
	3	29.234	29.309	29.283	29.275	37.5	40.5	37.5	39.0	40.0	40.0	33.0	45.0	37.0	206.	220.	193.	26
	4	29.223	29.117	29.117	29.172	37.0	38.5	33.5	39.5	41.0	36.0	38.8	43.0	35.0	188.	200.	160.	12
	5	29.430	29.468	29.433	29.444	26.0	31.0	31.5	28.0	33.0	33.0	31.3	39.0	26.0	117.	151.	160.	12
	6	28.970	29.133	29.527	29.210	32.0	34.5	31.0	33.5	38.0	34.0	35.1	41.0	29.0	162.	154.	132.	13
	7	29.800	29.784	29.691	29.738	25.5	32.0	33.0	27.0	35.0	36.0	32.6	38.0	25.0	121.	142.	149.	17
	8	29.473	29.339	29.435	29.416	36.0	40.5	38.0	39.0	44.0	40.0	41.0	48.0	36.0	173.	207.	160.	14
	9	29.701	29.770	29.870	29.780	30.0	37.0	33.0	32.0	40.0	35.0	35.6	39.0	29.0	144.	121.	162.	12
	10	30.041	29.991	30.005	30.012	25.5	32.0	32.0	27.0	36.0	35.0	32.6	34.0	25.0	121.	129.	142.	13
	11	30.006	29.902	29.834	29.914	31.0	36.0	31.5	33.0	39.0	44.0	38.6	41.0	31.0	151.	173.	149.	15
	12	29.724	29.583	29.560	29.622	30.0	32.0	43.0	32.0	36.5	47.0	38.5	50.0	30.0	144.	123.	225.	14
	13	29.485	29.316	29.297	29.366	38.0	49.0	47.0	39.0	55.0	51.0	48.3	57.0	38.0	216.	269.	270.	5
	14	29.247	29.191	29.156	29.195	43.0	50.5	48.5	45.0	58.0	51.0	51.3	59.0	43.0	251.	322.	302.	26
	15	29.230	29.216	29.230	29.225	48.0	51.0	48.0	49.0	55.0	51.5	51.8	58.0	47.0	322.	335.	289.	13
	16	29.135	29.066	29.009	29.077	44.0	50.0	51.0	46.5	53.0	54.0	51.1	54.0	45.0	255.	321.	335.	33
	17	29.055	29.342	29.507	29.301	52.0	54.0	54.5	55.0	57.0	57.0	56.3	57.0	39.0	349.	378.	323.	33
	18	29.370	29.506	29.495	29.524	29.0	36.0	37.0	31.5	39.0	40.0	36.8	43.0	30.0	131.	173.	181.	5
	19	29.554	29.540	29.517	29.537	31.0	42.0	42.0	32.0	45.0	45.0	40.6	48.0	32.0	162.	228.	222.	26
	20	29.432	29.306	29.290	29.343	38.0	42.0	42.0	41.0	45.0	45.0	43.6	48.0	39.0	190.	222.	222.	21
	21	29.284	29.253	29.283	29.273	34.5	38.0	39.0	37.0	40.5	41.5	39.6	43.5	32.5	167.	196.	206.	19
	22	29.186	29.105	29.183	29.158	34.0	34.5	35.5	36.0	37.0	37.0	36.6	44.0	35.0	170.	167.	168.	13
	23	29.336	29.378	29.425	29.380	35.0	36.0	36.0	37.0	38.5	38.0	37.8	42.0	35.0	178.	179.	186.	14
	24	29.507	29.460	29.413	29.460	35.0	37.0	40.0	38.0	39.0	42.0	39.6	44.5	36.0	165.	182.	221.	19
	25	29.423	29.438	29.534	29.465	30.0	39.0	33.0	33.0	42.0	35.0	36.6	40.0	30.0	132.	199.	162.	16
	26	29.550	29.491	29.465	29.505	31.5	36.5	32.0	35.0	39.5	34.0	36.1	46.0	37.0	138.	177.	155.	16
	27	.....	29.510	29.595	29.553	.....	35.0	32.0	.....	36.5	35.0	23.8	39.0	32.0	.....	184.	142.	102
	28	29.680	29.513	29.501	29.565	29.0	30.0	32.0	30.5	32.0	35.0	32.5	38.5	28.0	143.	144.	142.	13
	29	29.339	29.205	29.125	29.223	32.0	36.0	34.0	35.0	38.5	37.0	36.8	41.5	26.5	142.	179.	157.	12
	30	28.799	.....	28.686	28.743	37.0	.....	32.0	39.0	.....	34.0	24.3	41.0	32.0	194.	.....	155.	116
Means....		29.404	29.381	29.406	29.408	.....	.....	.....	35.6	35.7	36.0	38.8	.....	.....	175.	201.	205.	122
Dec.	1	28.899	29.001	29.040	28.947	28.0	28.0	27.0	30.0	30.0	29.0	29.7	37.0	27.0	130.	130.	124.	128
	2	28.900	28.912	29.090	28.967	33.0	33.0	32.5	35.0	35.0	35.0	35.0	38.0	24.0	162.	162.	153.	134
	3	28.389	.....	29.200	29.295	27.0	.....	.....	29.0	.....	.....	29.0	.....	.....	124.	.....	.....	124
	4	28.407	29.457	29.700	29.521	41.0	39.0	33.0	42.0	41.0	35.0	39.3	45.0	36.0	244.	212.	162.	26
	5	28.812	29.716	29.711	29.746	22.0	22.5	28.0	24.0	30.5	36.0	30.2	38.0	20.5	95.	133.	92.	09
	6	28.537	29.365	29.250	29.384	20.5	29.0	31.0	21.0	31.0	33.0	25.0	36.0	18.0	105.	137.	151.	131
	7	28.227	29.420	29.715	29.454	29.0	26.5	20.5	31.0	29.0	24.0	28.0	36.5	23.5	137.	118.	071.	102
	8	28.687	29.687	29.669	29.681	15.0	27.5	29.0	17.0	30.0	31.0	26.0	36.0	14.0	071.	121.	137.	110
	9	28.377	29.199	29.261	29.261	25.5	31.5	27.5	25.5	33.0	30.0	29.5	36.5	20.0	138.	161.	121.	140
	10	28.126	28.995	29.067	29.063	26.5	.....	35.0	29.0	.....	37.0	33.0	39.0	24.5	118.	.....	172.	140
	11	28.198	29.136	29.067	29.134	29.5	39.0	39.5	31.0	40.0	40.5	37.2	43.0	31.0	146.	225.	230.	200
	12	28.860	28.983	29.294	29.046	40.0	40.0	23.0	42.5	43.0	25.0	36.8	47.0	23.0	215.	208.	100.	174
	13	29.708	.....	29.278	29.493	10.0	.....	15.0	12.0	.....	17.0	14.5	31.0	9.5	046.	.....	063.	055
	14	29.669	28.661	29.752	29.694	1.0	7.0	7.5	1.0	10.5	10.0	7.2	22.0	2.0	019.	020.	033.	024
	15	29.659	28.612	29.654	29.642	0.5	11.0	5.0	2.0	14.0	7.0	7.7	19.0	1.0	033.	037.	032.	034
	16	29.561	28.371	29.397	29.443	6.5	13.0	12.5	9.0	16.0	14.0	13.0	20.0	4.0	030.	044.	060.	045
	17	29.398	28.452	29.463	29.438	9.0	22.0	19.0	11.0	24.5	21.5	19.0	30.5	7.0	043.	029.	075.	022
	18	29.540	28.337	29.103	29.327	11.5	27.0	32.0	13.0	28.0	33.0	24.7	35.5	13.0	056.	136.	162.	123
	19	28.928	28.034	29.326	29.096	32.5	30.0	18.0	34.0	32.0	21.0	29.0	37.0	20.0	166.	144.	063.	135
	20	29.286	28.274	28.994	29.185	14.0	11.0	19.0	15.0	12.0	20.0	15.7	26.0	12.5	073.	061.	022.	073
	21	29.364	28.407	29.543	29.438	12.0	15.0	12.5	14.0	17.0	15.0	15.3	25.0	12.5	053.	063.	042.	064
	22	29.491	28.689	29.846	29.675	5.0	12.0	9.0	7.0	14.0	10.5	10.5	20.0	4.0	032.	052.	048.	044
	23	29.813	28.715	29.420	29.649	3.0	13.0	16.0	5.0	14.5	18.0	12.5	22.0	2.0	027.	061.	067.	032
	24	29.012	.....	28.754	28.883	28.0	.....	32.0	29.0	.....	34.0	31.5	36.0	16.0	142.	.....	153.	149
	25	28.986	.....	29.203	29.095	33.5	.....	36.5	35.0	.....	38.0	36.5	42.5	32.0	173.	.....	196.	129
	26	29.219	28.185	.....	29.202	35.5	35.0	.....	37.0	36.5	.....	36.8	41.0	31.0	188.	184.	.....	126
	27	29.335	28.460	29.545	29.447	31.5	34.0	28.5	33.0	37.0	30.0	33.3	36.0	31.5	161.	157.	139.	132
	28	29.430	28.381	29.606	29.472	29.0	32.0	29.5	30.0	33.0	31.0	31.3	36.0	26.5	149.	168.	152.	156
	29	29.702	28.780	29.675	29.719	17.5	23.5	23.5	19.0	25.0	25.0	23.0	34.0	14.0	083.	109.	109.	100
	30	29.512	.....	29.510	29.511	23.5	.....	23.0	26.5	.....	25.0	25.8	33.0	23.0	092.	.....	100.	096
	31	29.393	28.251	29.330	29.325	26.5	31.5	34.5	28.0	33.0	36.0	32.3	38.0	23.5	126.	161.	180.	156
Means....		29.433	29.365	29.360	29.395	.....	.....	.....	23.1	27.6	26.2	25.7	...	.....	109.	193.	113.	116

ie northern and northwestern lakes, at Tawas City, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.820	.871	.840	.843	Calm...	SE.....	SE.....	0	11	14	8.3	S. 45 E.	10	10	10	.....	.26
.756	.840	.833	.809	SW....	SW....	W....	10	22	1	11.0	S. 45 W.	10	8	10	.....	.24
.862	.792	.776	.810	SW....	SW....	SW....	1	20	28	16.3	S. 45 W.	10	10	9	.....	.....
.773	.782	.753	.769	SW....	NW....	NW....	2	18	25	14.3	N. 47 W.	10	10	9	.....	.....
.768	.800	.851	.813	NW....	NW....	W....	30	25	30	26.3	N. 60 W.	1	8	10	.....	.....
.841	.673	.712	.742	SW....	NW....	NW....	18	40	38	26.7	N. 58 W.	10	10	10	.....	.....
.821	.698	.705	.741	N.....	SE.....	SE.....	2	5	30	17.7	S. 46 E.	8	10	10	.....	.....
.726	.717	.645	.696	S.....	SW....	W....	25	14	4	12.3	S. 22 W.	10	0	0	.....	.....
.794	.732	.797	.774	NW....	NW....	NW....	15	15	3	11.0	N. 45 W.	2	1	1	.....	.....
.821	.610	.698	.709	NW....	NE.....	E.....	1	17	10	8.3	N. 60 E.	2	3	8	.....	.....
.800	.726	.760	.762	SW....	S.....	W....	5	14	5	6.3	S. 26 W.	4	9	1	.....	.....
.794	.568	.698	.686	SW....	SW....	SW....	5	20	28	17.7	S. 45 W.	9	9	6	.....	.....
.907	.620	.722	.749	SW....	SW....	SW....	1	16	26	14.3	S. 45 W.	10	10	1	.....	.....
.840	.669	.824	.777	SW....	SW....	W....	1	7	3	3.3	S. 56 W.	0	0	0	.....	.....
.926	.802	.758	.828	SW....	SW....	W....	5	18	1	8.0	S. 46 W.	10	6	1	.....	.....
.807	.798	.802	.802	Calm...	SW....	SW....	0	2	30	10.7	S. 45 W.	3	10	10	.....	.....
.805	.812	.843	.820	W.....	W.....	W.....	30	35	2	22.3	West...	10	3	1	.....	.....
.740	.726	.732	.732	NW....	Calm...	SW....	2	0	20	6.7	S. 50 W.	10	10	8	.....	.....
.896	.762	.762	.806	Calm...	S.....	SE.....	0	28	30	18.0	S. 23 E.	1	10	4	.....	.....
.738	.762	.762	.754	S.....	S.....	Calm...	35	14	0	16.3	South...	8	9	1	.....	.....
.759	.779	.784	.774	NW....	NW....	NE.....	2	4	15	5.3	N. 23 E.	10	10	10	.....	.....
.802	.759	.855	.805	NW....	NW....	NW....	4	10	15	9.7	N. 45 W.	10	10	10	.....	.32
.807	.768	.811	.795	NW....	NW....	Calm...	9	10	0	6.3	N. 45 W.	10	10	10	.....	.....
.719	.773	.829	.773	Calm...	S.....	S.....	0	25	28	17.7	South...	10	1	0	.....	.....
.703	.744	.797	.744	W.....	NW....	NW....	5	3	1	2.6	N. 70 W.	0	5	0	.....	.....
.674	.729	.792	.731	NW....	SW....	W....	1	10	3	4.2	S. 59 W.	6	4	8	.....	.....
.....	.853	.698	.517	.....	NW....	Calm...	.....	11	0	5.5	N. 45 W.	.....	10	10	.....	.....
.839	.794	.698	.777	Calm...	NE.....	S.....	0	1	13	4.0	S. 3 E.	2	10	10	.....	.....
.698	.768	.712	.726	E.....	S.....	S.....	4	3	35	13.0	S. 6 E.	10	10	8	.....	.....
.816	.....	.792	.536	SW....	.....	SW....	40	.....	15	27.5	S. 45 W.	10	.....	10	.....	.....
.768	.724	.768	.753	.....	.....	.....	.....	.....	.....	6.3	S. 54 W.	6.8	7.2	6.6	.....	.82
.782	.782	.775	.780	W.....	SW....	SW....	10	7	3	6.3	S. 67 W.	10	10	8	.....	.....
.797	.797	.747	.780	SW....	Calm...	Calm...	11	0	0	3.7	S. 45 W.	10	10	10	.....	.....
.775	.....	.....	.775	Calm...	.....	.....	0	.....	.....	0.0	Calm...	10	.....	10	.....	.....
.914	.824	.797	.845	W.....	W.....	NW....	3	15	18	11.0	N. 67 W.	10	10	10	.....	.26
.738	.786	.291	.605	Calm...	SW....	Calm...	0	4	0	1.3	S. 45 W.	1	0	0	.....	.....
.928	.788	.800	.836	SW....	SW....	SW....	7	16	6	9.7	S. 45 W.	4	10	10	.....	.....
.758	.721	.542	.624	NW....	NW....	Calm...	20	23	0	14.3	N. 45 W.	10	3	6	.....	.....
.692	.729	.728	.736	W.....	S.....	S.....	1	4	15	6.3	S. 3 W.	9	2	10	.....	.....
L. 000	.851	.729	.860	S.....	Calm...	SW....	11	0	8	5.7	S. 19 W.	8	10	0	.....	.....
.721	.....	.807	.764	SW....	SW....	SW....	15	11	10	12.0	S. 45 W.	10	10	8	.....	.....
.841	.910	.911	.827	Calm...	Calm...	E.....	0	0	15	5.0	East...	10	9	1	.....	.....
.789	.750	.746	.762	S.....	SW....	SW....	20	40	45	33.7	S. 37 W.	2	10	10	.....	.....
.610	.....	.671	.641	SW....	.....	W....	25	.....	3	9.0	S. 49 W.	1	.....	0	.....	.....
.416	.224	.474	.393	SW....	W.....	NW....	8	40	10	17.3	N. 88 W.	0	2	0	.....	.....
.712	.457	.538	.569	W.....	W.....	W.....	8	3	5	5.3	West...	1	5	5	.....	.....
.461	.492	.726	.560	SW....	S.....	S.....	8	20	25	17.0	S. 6 W.	9	4	0	.....	.....
.596	.680	.647	.641	SW....	S.....	W....	4	15	3	6.2	S. 18 W.	0	10	0	.....	.....
.716	.883	.893	.831	Calm...	SE.....	S.....	0	10	3	4.1	S. 35 E.	10	10	10	.....	.....
.843	.794	.570	.736	SW....	W.....	NW....	35	35	13	23.3	S. 77 W.	10	9	0	.....	.06
.826	.804	.850	.827	W.....	N.....	NW....	1	2	13	5.0	N. 43 W.	10	10	10	.....	.....
.635	.671	.556	.621	NW....	SW....	SW....	5	30	3	7.7	S. 57 W.	0	7	10	.....	.45
.542	.635	.692	.622	SW....	NW....	NW....	1	40	3	14.3	N. 47 W.	1	8	0	.....	.....
.500	.730	.682	.637	SW....	SW....	SW....	7	18	25	16.7	S. 45 W.	10	0	10	.....	.....
.887	.....	.792	.839	S.....	.....	S.....	10	.....	18	14.0	South...	10	.....	6	.....	.....
.847	.....	.858	.853	SW....	.....	SW....	5	.....	1	3.0	S. 45 W.	0	.....	0	.....	.....
.835	.853	.....	.854	Calm...	N.....	.....	0	4	.....	2.0	North...	10	10	.....	.....	.....
.851	.712	.837	.797	W.....	S.....	SW....	2	4	2	2.0	S. 31 W.	1	9	0	.....	.....
.880	.893	.892	.888	SW....	SW....	NW....	1	4	6	2.3	N. 84 W.	10	10	8	.....	.....
.776	.810	.810	.799	Calm...	SW....	S.....	0	5	30	10.3	S. 7 W.	2	10	10	.....	.....
.639	.....	.746	.693	SW....	.....	Calm...	25	.....	0	12.5	S. 45 W.	9	.....	0	.....	.....
.827	.851	.851	.843	S.....	S.....	S.....	28	35	10	24.3	South...	8	10	10	.....	.....
.748	.739	.717	.741	.....	.....	.....	.....	.....	.....	6.8	S. 40 W.	6.3	7.6	5.4	.....	.77



Reductions of the monthly meteorological register of the service

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
					7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.					°	°	°	°	°	°	°	°	°					
Jan.	1	29.492	29.567	29.665	29.574	23.0	21.5	15.0	25.0	23.0	17.0	21.6	38.5	14.0	100.0	0.8	0.8	0.8
	2	29.603	29.460	29.405	29.489	12.0	17.0	20.5	15.0	19.0	23.0	19.0	26.0	13.0	0.041	0.071	0.071	0.041
	3	29.333	29.318	29.352	29.334	23.0	25.0	25.0	24.0	27.0	27.0	26.0	32.0	20.0	112.1	112.1	112.1	112.1
	4	29.563	29.642	29.731	29.645	12.0	9.0	-3.5	14.0	11.0	-2.5	7.5	31.0	-25.0	0.052	0.043	0.064	0.054
	5	29.646	29.610	29.713	29.656	1.0	9.0	10.5	2.0	11.0	12.0	08.3	17.0	-5.0	0.034	0.043	0.038	0.038
	6	29.784	29.694	29.890	29.789	11.0	18.5	8.0	12.5	21.0	10.5	14.6	26.0	10.5	0.054	0.072	0.041	0.054
	7	30.315	30.440	30.447	30.400	2.5	5.0	3.0	4.5	7.0	4.5	5.3	19.5	2.0	0.026	0.022	0.033	0.027
	8	30.611	30.561	30.471	30.548	5.0	10.0	0.0	6.5	12.0	1.5	6.6	17.0	-3.0	0.028	0.046	0.036	0.036
	9	30.311	30.118	30.006	30.145	-10.5	15.5	18.0	-9.0	18.5	20.0	9.7	24.0	-12.0	0.010	0.054	0.036	0.036
	10	29.737	29.572	29.496	29.601	20.0	25.0	26.5	22.0	26.5	28.0	25.5	32.0	12.0	0.085	0.118	0.136	0.118
	11	29.502	29.454	29.436	29.464	27.0	33.5	31.0	28.5	35.0	32.0	31.8	36.0	27.0	130.1	172.1	162.1	162.1
	12	29.130	29.013	.....	29.071	32.5	33.0	.....	34.0	34.0	.....	34.0	.....	.....	165.1	175.1	.....	175.1
	13	29.062	29.421	29.533	29.338	22.5	17.0	10.0	24.0	18.0	11.5	17.8	31.0	10.0	103.0	0.83	0.051	0.051
	14	29.859	.....	29.879	29.869	-3.0	.....	5.0	0.0	.....	7.0	3.5	17.0	-2.0	0.005	.....	0.029	0.029
	15	29.690	29.412	28.850	29.317	10.5	15.0	20.0	13.0	17.0	22.0	17.3	27.0	3.0	0.041	0.063	0.058	0.058
	16	28.882	29.069	29.251	29.067	20.5	21.5	21.0	22.5	23.0	23.0	22.8	29.0	20.0	0.087	0.092	0.090	0.089
	17	.....	29.095	29.202	29.148	.....	21.5	16.0	.....	23.0	17.5	20.2	28.0	15.0	.....	0.091	0.073	0.073
	18	29.186	29.205	29.276	29.222	11.0	20.0	19.5	13.0	21.5	21.5	18.6	26.5	10.0	0.049	0.083	0.082	0.082
	19	29.157	29.112	28.823	29.030	.....	31.0	32.0	25.5	32.0	33.0	30.1	36.0	20.0	.....	162.1	162.1	162.1
	20	29.198	29.421	29.529	29.382	8.0	4.0	1.0	11.0	7.0	3.0	7.0	40.0	1.0	0.028	0.018	0.023	0.023
	21	29.614	29.446	29.393	29.484	-5.0	5.0	8.5	-2.0	8.0	10.0	53.0	18.5	-5.0	0.000	0.021	0.046	0.023
	22	29.510	29.524	29.598	29.544	3.0	6.0	8.0	5.0	9.0	10.0	8.0	26.0	2.0	0.027	0.023	0.040	0.030
	23	29.643	29.654	29.722	29.673	-7.0	14.0	6.0	-5.0	17.5	8.0	6.8	20.0	-8.0	0.009	0.042	0.041	0.041
	24	29.660	29.593	29.403	29.552	8.0	20.0	23.5	10.0	22.5	25.0	19.1	28.0	-5.0	0.040	0.079	0.109	0.079
	25	29.276	29.275	29.356	29.302	22.5	24.0	18.0	24.0	26.0	20.0	23.3	30.0	20.0	103.1	106.0	0.076	0.076
	26	29.382	29.384	.....	29.383	7.5	24.0	.....	9.5	26.0	.....	17.7	.....	.....	0.038	1.06	.....	0.038
	27	29.563	29.525	29.497	29.526	19.5	23.5	27.5	21.0	25.0	23.0	23.0	29.0	17.0	0.062	0.109	0.098	0.098
	28	29.278	29.239	29.276	29.264	21.5	24.0	27.0	23.5	25.5	28.0	25.5	31.0	20.0	0.092	0.112	0.136	0.112
	29	.....	29.303	29.230	29.266	.....	25.5	34.0	.....	31.0	35.0	33.0	36.0	20.0	.....	146.1	183.1	183.1
	30	29.104	29.223	29.291	29.206	32.0	33.0	28.0	33.5	35.0	30.0	32.8	38.0	29.0	162.1	162.1	130.1	162.1
	31	29.177	28.951	29.037	29.055	20.0	27.5	28.0	23.0	31.0	30.0	28.0	35.0	20.0	0.074	0.110	0.130	0.110
Means....		29.530	29.476	29.509	29.495	.....	.....	.....	14.8	21.4	18.6	18.7	.....	.....	0.064	0.089	0.080	0.080
Feb.	1	29.075	29.055	29.136	29.089	17.0	17.0	18.0	19.5	19.0	19.0	19.2	33.0	17.0	0.066	0.071	0.087	0.075
	2	29.099	.....	29.170	29.135	13.0	.....	9.0	15.0	.....	11.0	13.0	24.0	10.0	0.056	.....	0.043	0.043
	3	29.128	29.383	29.362	29.311	8.0	6.5	6.0	10.0	9.0	8.0	9.0	20.0	5.0	0.040	0.030	0.034	0.034
	4	.....	29.475	29.735	29.605	.....	8.5	-6.0	.....	10.0	-4.0	2.0	15.5	-4.0	.....	0.046	0.010	0.023
	5	29.822	29.697	29.671	29.730	-12.0	4.0	12.0	-10.0	6.0	14.0	3.3	18.0	-16.0	0.005	0.030	0.052	0.029
	6	29.961	29.902	29.791	29.885	6.0	13.0	14.5	8.0	14.5	16.0	12.8	20.0	6.0	0.034	0.061	0.076	0.057
	7	29.503	29.458	29.610	29.524	17.0	26.5	30.0	19.5	28.0	31.0	26.2	35.0	14.0	0.066	0.126	0.153	0.126
	8	29.571	.....	29.435	29.503	17.5	.....	20.5	19.0	.....	22.0	21.0	34.0	13.0	0.079	.....	0.030	0.030
	9	29.300	29.070	29.015	29.128	21.5	23.5	26.0	23.0	25.0	28.0	25.3	31.0	12.0	0.024	0.109	0.117	0.109
	10	29.029	29.179	29.337	29.202	26.0	33.5	26.5	28.0	35.0	28.0	30.3	38.0	26.0	0.117	0.172	0.196	0.172
	11	29.435	29.469	29.580	29.495	15.0	22.0	17.0	17.0	25.0	20.0	20.7	27.0	8.5	0.063	0.084	0.080	0.080
	12	29.609	29.606	29.556	29.610	7.0	20.0	17.5	9.5	2.3	20.5	17.7	30.0	6.0	0.031	0.089	0.056	0.056
	13	29.548	29.500	29.444	29.497	18.0	23.0	21.0	20.0	25.0	23.0	22.0	31.0	16.0	0.076	0.100	0.080	0.080
	14	28.972	28.919	.....	28.946	23.5	26.0	.....	25.0	28.0	.....	26.5	.....	.....	109.1	117.1	.....	117.1
	15	29.522	29.539	29.664	29.575	3.0	1.0	0.0	-1.0	3.0	2.0	1.3	8.0	-4.0	0.015	0.023	0.021	0.021
	16	29.606	29.606	29.599	29.604	-22.5	-3.5	3.5	-21.0	0.0	6.0	-4.7	11.0	-23.0	.....	0.005	0.023	0.034
	17	29.503	29.346	29.435	29.428	10.5	27.0	29.5	12.0	30.0	31.0	24.3	35.0	2.0	0.052	0.113	0.146	0.113
	18	29.381	.....	29.147	29.264	23.0	.....	30.0	26.0	.....	32.0	29.0	35.0	24.0	0.089	.....	144.1	144.1
	19	29.932	29.047	29.142	29.040	28.5	27.5	20.0	30.0	31.0	22.0	27.7	35.0	20.0	0.139	0.110	0.085	0.110
	20	29.269	29.374	29.526	29.410	13.0	19.0	15.0	15.0	20.0	17.5	17.5	27.5	10.5	0.056	0.086	0.083	0.083
	21	29.633	29.435	29.335	29.468	0.0	22.0	33.5	2.0	25.0	35.0	20.7	37.5	-9.5	0.021	0.084	0.172	0.084
	22	29.373	29.330	.....	29.352	29.0	37.5	.....	42.0	41.5	.....	41.8	.....	.....	194.1	172.1	.....	172.1
	23	29.353	29.208	29.976	29.179	22.5	25.0	30.0	24.0	26.5	31.0	27.2	34.0	21.0	0.103	0.118	0.153	0.118
	24	29.572	29.177	29.254	29.334	22.0	24.5	20.0	24.0	27.0	21.0	24.0	36.0	21.5	0.095	0.103	0.096	0.096
	25	29.775	29.803	29.909	29.829	-3.0	5.5	-2.0	0.0	7.5	1.0	25.3	28.0	-2.0	0.005	0.027	0.035	0.027
	26	29.974	29.853	29.780	29.869	-9.0	10.0	17.5	-6.0	13.5	19.5	9.0	22.5	-14.0	.....	0.029	0.082	0.082
	27	29.728	29.736	29.752	29.741	18.0	28.0	24.5	20.0	32.0	27.0	26.3	39.0	16.0	0.076	0.108	0.103	0.103
	28	29.616	29.462	29.450	29.501	20.0	29.0	34.5	21.5	32.0	36.0	29.8	40.0	16.5	0.031	0.124	0.120	0.120
Means....		29.428	29.425	29.457	29.417	.....	.....	.....	14.6	21.5	20.3	19.6	.....	.....	0.070	0.086	0.080	0.080

*northern and northwestern lakes, at Tawas City, Michigan.*

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely over-cast.)			Am't of evaporation, in U. S. inches and deci- mals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
2 p.m.	9 p.m.	Mean.	7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.								
46	.797	.671	.738	SW...	W.....	SW...	40.0	40.0	6.0	29.3	S. 66 W.	2	2	9		
75	.692	.663	.610	S.....	S.....	SW...	40.0	55.0	25.0	31.3	S. 11 W.	10	10	10		
68	.761	.761	.797	W.....	SW...	SW...	2.0	10.0	0.3	4.0	S. 54 W.	10	10	10		
35	.596	.665	.632	W.....	NW...	SW...	15.0	26.0	3.0	1.3	N. 65 W.	6	3	10		
18	.596	.706	.673	W.....	N.....	SW...	1.0	28.0	13.0	13.3	S. 76 W.	10	9	10		
11	.641	.488	.613	W.....	SE....	N.....	2.0	0.5	8.0	2.7	N. 14 W.	10	8	0		
90	.538	.618	.549	N.....	N.....	N.....	13.0	5.0	3.0	7.0	North ..	10	8	10		
47	.610	.570	.609	SW...	S.....	NW...	1.0	6.0	0.0	2.3	S. 7 W.	10	10	0		
39	.533	.702	.525	SW...	S.....	SW...	2.0	6.0	15.0	7.5	S. 33 W.	0	6	10		
21	.818	.826	.788	SW...	SW...	SW...	10.0	4.0	2.0	5.3	S. 45 W.	10	10	10		
29	.847	.896	.857	NW...	E.....	NE....	0.3	0.3	8.0	2.7	N. 44 E.	10	10	10		
43	.895	.....	.869	NE....	E.....	.....	18.0	0.3	.....	6.0	N. 47 E.	10	10	.....		
403	.810	.701	.781	NW...	NW...	NW...	12.0	15.0	18.0	1.5	N. 45 W.	10	10	5		
87	.....	.538	.313	NW...	.....	NW...	1.0	.....	5.0	2.0	N. 45 W.	3	.....	10		
30	.671	.721	.641	E.....	E.....	SE....	28.0	40.0	45.0	3.5	S. 72 E.	10	8	10		
25	.787	.730	.747	W.....	NW...	W.....	3.0	30.0	2.0	11.3	N. 51 W.	10	10	10		
.....	.797	.757	.777	.....	NW...	W.....	.....	1.0	0.0	0.7	N. 71 W.	.....	10	10		
23	.790	.716	.710	W.....	W.....	W.....	0.3	0.3	1.0	0.5	West. . .	3	10	10		
.....	.896	.893	.894	N.....	S.....	NE....	2.0	17.0	0.0	3.7	S. 1 E.	10	10	10		
398	.308	.460	.389	SW...	SW...	SW...	40.0	40.0	30.0	3.3	S. 45 W.	6	9	1		
111	.334	.687	.344	SW...	SW...	NW...	40.0	40.0	33.0	28.7	S. 67 W.	0	2	8		
500	.356	.582	.479	SW...	W.....	W.....	1.0	12.0	0.0	4.3	S. 87 W.	1	8	0		
257	.439	.553	.416	NW...	E.....	W.....	0.3	0.3	0.0	1.0	N. 45 W.	9	7	0		
582	.658	.809	.623	NW...	E.....	NE....	0.3	17.0	18.0	10.7	N. 67 E.	10	7	10		
303	.754	.702	.753	NW...	NW...	NW...	2.0	2.0	0.0	1.6	N. 45 W.	10	9	5		
575	.754	.....	.664	W.....	SW...	.....	0.3	1.0	.....	0.7	S. 71 W.	0	1	.....		
783	.809	.797	.796	NW...	S.....	SE....	0.3	10.0	8.0	5.3	S. 20 E.	10	10	10		
734	.812	.883	.810	S.....	S.....	SE....	33.0	16.0	13.0	19.7	S. 9 E.	10	10	10		
.....	.841	.898	.869	.....	SE....	SE....	.....	8.0	5.0	4.3	S. 45 E.	.....	10	10		
841	.797	.782	.807	SW...	W.....	W.....	0.3	19.0	8.0	9.0	S. 89 W.	10	10	0		
598	.633	.782	.671	W.....	W.....	W.....	18.0	45.0	8.0	23.7	West. . .	0	4	10		
602	.687	.709	.671	.....	.....	.....	.....	.....	.....	4.9	S. 52 W.	7.2	8.0	7.5		
623	.692	.845	.720	N.....	W.....	W.....	5.0	35.0	8.0	1.5	N. 84 W.	10	10	10		
648	.....	.596	.622	W.....	.....	W.....	15.0	.....	3.0	6.0	West. . .	10	.....	5		
582	.461	.553	.532	SW...	NW...	NW...	11.0	10.0	0.3	5.0	S. 88 W.	10	5	0		
.....	.687	.284	.485	.....	NW...	W.....	.....	15.0	0.3	5.0	N. 46 W.	.....	10	0		
156	.520	.635	.437	W.....	SW...	N.....	2.0	35.0	11.0	1.0	S. 63 W.	9	10	10		
533	.730	.743	.675	NW...	SE....	SE....	0.3	1.0	35.0	12.0	S. 45 E.	10	9	10		.02
623	.826	.893	.781	S.....	SW...	N.....	30.0	8.0	5.0	10.3	S. 11 W.	5	10	10		
768	.....	.790	.779	N.....	.....	N.....	1.0	.....	0.3	0.4	North ..	10	.....	10		
797	.809	.768	.791	S.....	S.....	S.....	35.0	35.0	30.0	30.0	South ..	10	10	10		
768	.847	.826	.814	W.....	E.....	N.....	0.3	5.0	1.0	1.7	N. 79 E.	10	10	10		
671	.622	.556	.616	N.....	NE....	W.....	4.0	0.3	0.3	1.3	N. 2 W.	10	10	0		
470	.634	.500	.535	N.....	N.....	W.....	0.3	0.3	0.3	0.2	N. 4 W.	10	9	0		
702	.746	.730	.726	NW...	SE....	S.....	0.3	0.3	3.0	1.0	South ..	10	10	10		
809	.768	.....	.788	N.....	W.....	.....	0.3	15.0	.....	5.0	N. 89 W.	10	10	.....		
369	.460	.438	.422	W.....	NW...	W.....	2.0	25.0	0.3	9.0	N. 50 W.	10	10	0		
.....	.087	.400	.243	W.....	SW...	SW...	10.0	25.0	55.0	22.3	S. 51 W.	10	8	10		
706	.675	.841	.541	SW...	S.....	SW...	10.0	40.0	33.0	28.3	S. 23 W.	10	1	10		
634	.....	.794	.714	S.....	.....	SW...	25.0	.....	3.0	9.3	S. 4 W.	8	.....	10		
836	.633	.721	.730	SW...	W.....	SW...	0.3	18.0	0.3	7.0	S. 84 W.	10	1	10		
648	.780	.671	.700	NW...	SW...	NW...	2.0	18.0	0.3	6.0	S. 52 W.	10	10	0		.06
438	.622	.847	.636	SE....	S.....	SW...	16.0	15.0	23.0	13.3	S. 7 W.	10	9	5		
744	.657	.....	.701	S.....	SW...	Calm.	15.0	0.3	0.0	5.0	S. 1 W.	9	8	.....		
803	.818	.893	.838	N.....	N.....	NW...	2.0	6.0	0.3	2.7	N. 2 W.	10	10	10		.52
738	.703	.855	.765	W.....	SW...	N.....	1.0	10.0	40.0	11.3	N. 15 W.	8	10	10		
087	.443	.123	.218	NW...	NW...	NW...	3.0	6.0	0.3	3.0	N. 45 W.	1	10	0		
.....	.357	.629	.493	SW...	S.....	S.....	0.3	18.0	35.0	17.7	S. 1 W.	1	6	10		
702	.594	.703	.666	SW...	S.....	W.....	0.3	1.0	3.0	1.3	S. 73 W.	10	1	8		
787	.694	.852	.778	SE....	E.....	SE....	2.0	0.3	2.0	1.3	S. 50 E.	10	10	10		
627	.643	.674	.641	.....	.....	.....	.....	.....	.....	5.5	S. 38 W.	8.9	8.2	6.6		.60

Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.				
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.					
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.			Mean.					
1865.					o	o	o	o	o	o	o	o	o						
March 1	29.483	29.343	.....	29.413	36.540.5	.....	.....	38.042.0	.....	40.0	.....	.....	.....	.....	196.	233	.....	144	.....
2	29.375	29.212	29.234	29.274	32.041.5	44.5	.....	35.043.0	46.0	41.3	48.0	34.0	.....	.....	142.	242	274	219	.....
3	29.334	29.360	29.451	29.382	28.031.0	24.0	.....	31.035.0	26.0	30.7	47.0	25.0	.....	.....	119.	128	106	118	.....
4	29.525	29.444	29.516	29.498	12.516.0	17.0	.....	15.020.0	20.0	18.3	21.0	14.0	.....	.....	048.	044	060	054	.....
5	29.701	29.666	29.646	29.671	11.024.0	21.5	.....	14.027.0	24.5	21.8	32.5	10.5	.....	.....	037.	095	085	074	.....
6	29.750	29.661	29.643	29.685	6.024.0	28.0	.....	8.027.0	30.0	21.7	31.0	5.0	.....	.....	023.	095	085	071	.....
7	29.598	29.636	29.622	29.619	12.517.0	18.5	.....	16.521.0	21.0	19.5	34.0	13.0	.....	.....	025.	049	049	041	.....
8	29.644	29.609	29.653	29.635	13.024.0	22.0	.....	15.027.0	24.5	22.2	34.5	9.0	.....	.....	056.	095	095	082	.....
9	29.472	29.519	29.657	29.549	20.023.0	19.0	.....	21.025.0	21.0	22.3	30.0	18.0	.....	.....	096.	100	100	088	.....
10	29.730	29.552	29.369	29.550	3.022.0	27.5	.....	6.026.0	29.5	20.5	33.0	4.0	.....	.....	016.	072	072	053	.....
11	28.985	29.078	29.391	29.151	28.535.5	30.0	.....	30.037.0	32.0	33.0	39.0	26.0	.....	.....	144.	168	128	139	.....
12	29.442	29.535	29.583	29.520	24.527.0	25.5	.....	27.029.0	27.0	27.3	35.0	24.0	.....	.....	103.	124	124	117	.....
13	29.706	29.789	29.728	29.741	25.031.0	39.0	.....	27.033.0	30.0	30.0	36.0	21.0	.....	.....	112.	151	151	138	.....
14	29.516	29.524	29.555	29.532	31.035.0	35.0	.....	32.037.0	37.0	35.3	40.0	28.0	.....	.....	162.	178	178	171	.....
15	29.490	29.361	.....	29.427	32.035.0	.....	.....	33.037.0	.....	35.0	.....	.....	.....	.....	168.	178	178	175	.....
16	29.092	29.021	29.225	29.113	28.035.0	16.0	.....	30.037.0	18.0	28.3	.....	15.5	.....	.....	130.	178	178	162	.....
17	29.235	29.370	29.575	29.393	0	6.0	2.0	2.0	10.0	4.0	05.3	.....	-1.0	.....	021.	012	012	015	.....
18	29.158	29.179	29.282	29.206	65.021.0	18.0	.....	9.023.0	20.0	17.3	.....	8.0	.....	.....	030.	090	090	078	.....
19	29.485	29.461	29.422	29.456	11.018.0	13.5	.....	13.020.0	16.0	16.3	.....	9.0	.....	.....	049.	076	076	067	.....
20	29.397	29.213	28.905	29.172	13.517.5	19.0	.....	15.519.0	21.0	18.8	.....	11.0	.....	.....	052.	079	079	073	.....
21	29.113	29.231	29.430	29.258	10.022.5	23.0	.....	12.526.0	25.0	21.2	.....	14.0	.....	.....	040.	090	090	067	.....
22	29.642	29.671	29.465	29.593	18.027.5	16.5	.....	20.029.0	18.0	22.3	.....	18.5	.....	.....	076.	133	073	086	.....
23	29.092	29.230	29.302	29.208	32.529.0	27.5	.....	34.031.0	30.0	31.7	.....	27.0	.....	.....	165.	137	121	159	.....
24	29.313	29.168	29.264	29.248	17.528.0	18.0	.....	20.029.5	20.0	23.2	.....	18.0	.....	.....	068.	136	076	083	.....
25	29.337	29.365	29.418	29.373	3.013.0	10.5	.....	5.015.5	13.0	11.2	.....	3.0	.....	.....	027.	050	041	035	.....
26	29.660	29.622	29.642	29.641	35.024.5	19.5	.....	5.525.5	22.0	17.7	.....	3.0	.....	.....	023.	115	077	072	.....
27	29.795	29.792	29.762	29.783	3.024.0	19.5	.....	5.029.0	22.0	18.7	.....	1.0	.....	.....	027.	072	077	059	.....
28	29.473	29.302	.....	29.388	21.524.0	.....	.....	23.026.0	.....	24.3	.....	.....	.....	.....	098.	106	.....	102	.....
29	29.322	29.410	29.427	29.386	24.031.0	26.0	.....	25.534.0	29.0	29.5	.....	24.0	.....	.....	112.	139	106	119	.....
30	29.417	.....	.....	29.417	8.0	.....	.....	10.5	.....	10.5	.....	.....	.....	.....	034	.....	.....	034	.....
31	28.685	28.807	29.075	28.856	32.038.0	36.5	.....	35.039.5	38.0	37.5	.....	8.0	.....	.....	142.	214	196	184	.....
Means....	29.415	29.404	29.454	29.423	.....	.....	.....	19.828.7	24.6	24.3	.....	.....	.....	.....	082.	120	109	101	.....
April 1	29.482	.....	.....	29.482	31.0	.....	.....	34.0	.....	34.0	.....	.....	.....	.....	139	.....	.....	139	.....
2	29.554	29.423	29.530	29.502	34.034.0	34.5	.....	35.536.0	36.0	35.8	.....	30.5	.....	.....	176.	170	120	172	.....
3	29.408	29.340	29.357	29.368	32.042.0	39.5	.....	35.044.0	41.0	40.0	.....	30.0	.....	.....	142.	241	223	225	.....
4	29.346	29.264	29.216	29.275	34.548.0	46.0	.....	36.049.0	47.0	44.2	.....	34.0	.....	.....	180.	315	297	304	.....
5	29.181	29.357	.....	29.269	40.041.0	.....	.....	41.043.5	.....	42.2	.....	.....	.....	.....	235.	224	.....	239	.....
6	29.469	29.320	29.319	29.369	28.539.0	41.0	.....	31.041.0	43.0	38.3	.....	29.5	.....	.....	128.	212	231	190	.....
7	29.352	29.373	29.327	29.351	33.538.5	38.5	.....	36.041.0	41.0	39.3	.....	32.0	.....	.....	159.	201	201	197	.....
8	29.165	28.968	29.173	29.102	39.048.0	43.5	.....	41.551.0	46.0	46.2	.....	32.0	.....	.....	206.	296	250	251	.....
9	29.582	29.655	.....	29.619	33.038.0	.....	.....	35.040.5	.....	37.7	.....	.....	.....	.....	162.	196	.....	179	.....
10	29.555	29.593	29.690	29.613	29.031.0	28.0	.....	31.033.0	30.0	31.3	.....	27.5	.....	.....	137.	151	130	134	.....
11	29.672	29.638	29.583	29.628	25.030.0	28.0	.....	27.031.5	29.5	29.3	.....	24.0	.....	.....	112.	150	136	135	.....
12	29.681	29.630	29.629	29.647	22.532.5	29.5	.....	25.035.0	32.0	30.7	.....	18.5	.....	.....	092.	152	134	126	.....
13	29.741	29.631	29.585	29.652	18.534.0	32.0	.....	21.038.0	35.0	31.3	.....	18.0	.....	.....	072.	144	142	119	.....
14	29.261	29.197	29.422	29.293	32.541.0	44.0	.....	34.045.5	46.0	41.8	.....	31.5	.....	.....	165.	198	170	178	.....
15	29.617	29.565	29.552	29.578	29.538.5	27.5	.....	32.041.5	30.0	34.5	.....	27.0	.....	.....	134.	194	121		

the northern and northwestern lakes, at Tawas City, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0=clear sky.) (10=sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
863	871		867	SW.	SW.		0.3	0.3		0.3	S. 45 W.	10	10			
698	874	882	818	NW	SW.	SW.	0.3	0.3	6	2.0	S. 46 W.	9	10	3		
685	628	754	689	SW.	W.	SW.	30	40	13	25.7	S. 67 W.	1	1	3		.17
560	412	556	509	W.	W.	W.	40	40	0.3	26.8	West	10	9	0		
457	644	644	582	W.	W.	NW	5	30	3	12.7	N. 87 W.	0	1	0		
356	644	644	548	NW	SE.	NW	0.3	17	20	1.0	N. 45 W.	0	4	3		
270	431	431	377	NW	NW	NW	36	40	31	35.7	N. 45 W.	6	1	10		
648	644	644	645	NW	NW	W.	20	24	0.3	14.7	N. 45 W.	5	1	0		
855	746	746	782	NW	NW	NW	1	20	6	9.0	N. 45 W.	10	9	0		
281	515	515	437	W.	S.	S.	11	35	35	22.7	S. 9 W.	1	9	10		.30
889	854	854	866	SW	W.	NW	0.3	8	0.3	2.8	West	10	10	10		
703	775	775	751	NE.	E.	NE.	0.3	11	0.3	3.7	N. 88 E.	10	10	10		
761	800	800	787	NE.	NE.	NE.	0.3	10	3	4.3	N. 45 E.	10	10	10		.48
896	807	807	837	N.	NW	NE.	2	0.3	0.3	0.8	North	10	10	10		
893	807	807	836	E.	SE.		0.3	0.3		0.3	S. 71 E.	10	10			
782	807	807	799	NW	SW.	SW.	3	33	10	14.3	S. 49 W.	8	10	0		
438	175	175	263	W.	W.	W.	14	40	3	19.0	West	4	3	1		
461	730	730	640	SW	SW.	W.	3	16	0.3	6.3	S. 46 W.	10	8	1		
623	702	702	676	NE.	E.	W.	4	14	2	5.0	N. 79 E.	10	10	5		.44
575	768	768	704	NE.	NE.	NE.	18	30	40	29.3	N. 45 E.	10	10	10		
522	574	574	557	NW	W.	W.	15	30	0.3	14.0	N. 75 W.	10	2	0		
702	831	761	765	W.	E.	E.	0.3	10	8	5.9	East	0	10	10		.09
843	788	729	787	SW.	SW.	SW.	2	17	5	7.7	S. 45 W.	10	10	8		
616	834	702	717	W.	SE.	W.	0.3	13	17	43.0	S. 42 W.	8	10	0		
500	568	530	533	W.	NW	NW	16	23	3	13.0	N. 61 W.	3	10	0		
400	815	652	622	W.	S.	W.	2	14	1	5.0	S. 12 W.	0	1	0		
500	449	652	534	W.	SE.	W.	0.3	4	2	1.0	S. 13 E.	10	5	3		.42
797	754		776	NE.	NE.		19	8		9.0	N. 45 E.	10	10			
812	712	665	730	NW	NW	W.	7	25	0.3	10.7	N. 45 W.	9	8	0		
488			488	W.			2			0.7	West	0				
698	864	858	807	S.	W.	W.	25	3	0.3	8.7	S. 7 W.	10	10	10		
638	687	684	669							4.7	N. 82 W.	6.8	7.3	4.3		1.90
712			712	NW			45			15.0	N. 45 W.	4	10	10		
849	802	851	834	SW.	E.	NE.	25	12	4	5.0	S. 10 W.	10	10	10		.48
698	836	867	800	NE.	NW	SW.	0.3	0.3	4	1.0	S. 47 W.	1	10	10		
851	820	923	888	SW.	S.	S.	0.3	4	0.3	1.3	S. 3 W.	8	5	10		
912	794		853	SW.	SW.		0.3	25		8.3	S. 45 W.	10	10	10		
736	824	833	798	SW.	E.	SE.	4	0.3	4	1.7	S. 4 E.	8	10	10		
753	781	781	772	W.	SW.	SW.	0.3	4	2	2.0	S. 46 W.		10	10		
784	790	805	793	S.	S.	SW.	60	35	12	34.7	S. 85 W.	5	10	1		
797	779		788	W.	E.		4	100		32.0	East	10	2	10		
788	800	782	790	W.	W.	SW.	35	100	0.3	45.0	S. 89 W.	8	10	10		
761	843	834	813	W.	W.	W.	12	12	0.3	8.1	West	9	10			
684	743	744	724	W.	NE.	W.	4	35	0.3	10.7	N. 40 E.		5	10		
641	628	698	656	W.	E.	S.	0.3	15	12	6.3	S. 51 E.	10	1	10		
843	650	802	765	S.	SW.	SW.	12	35	12	18.7	S. 36 W.	10	2	2		.06
744	741	729	738	W.	E.	E.	4	25	12	11.0	East	3	3	5		
896	669		849	SW.	E.		4	100		32.7	S. 88 E.	5	7	10		
712	802		757	SW.	SE.		45	100		36.7	S. 21 E.	10	9			
815	816	884	838	S.	SW.	W.	2	2	0.3	1.3	S. 23 W.	4	10	10		
881	874	916	890	NE.	NE.	N.	0.3	14	12	8.3	N. 25 E.	10	10	10		
876	816	856	849	SW.	SW.	NW	40	40	4	26.7	S. 48 W.	4	8	10		
598	836		717	E.	W.		18	0.3		5.9	East	8	9	10		
816	627	836	760	NE.	NE.	NW	35	12	4	16.0	N. 40 E.	10	10	9		
653	624	744	674	NW	NW	NW	40	40	15	31.7	N. 45 W.	1	10	10		
606	784	824	738	NW	NW	NW	45	40	100	58.3	N. 45 W.	3	9	1		
628	691	816	712	NW	E.	NW	28	25	0.3	7.0	N. 16 E.		1	4		
705	539	822	689	SE.	E.	NW	2	4	75	23.3	N. 43 W.	3	3	7		
	731	817	774		W.	W.		26	0.3	12.1	West	10	9	10		
744		809	777	W.		W.	0.3		0.3	0.2	West		10	5		
792	623	645	687	N.	E.	E.	2	15	45	20.0	N. 88 E.	8	10	6		
710	155	895	587	SW.	SW.	NW	40	40	0.3	26.0	S. 46 W.	4	8	10		
753	732	817	767							2.7	S. 78 W.	6.8	7.7	8.2		.54



Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					°	°	°	°	°	°	°	°	°					
May 1	29.104	29.047	28.975	29.042	37.5	37.5	35.0	38.0	46.0	33.0	39.0	.....	30.0	218.	113.	.....	153.	
2	29.334	29.329	29.388	29.350	35.5	42.0	37.0	38.0	45.0	41.0	41.3	.....	35.0	175.	228.	166.	186.	
3	29.371	29.294	29.272	29.312	33.5	45.0	32.0	36.0	50.0	45.0	43.7	.....	22.0	159.	234.	012.	136.	
4	29.257	29.236	29.235	29.243	45.0	48.0	42.5	41.0	51.5	45.0	45.8	.....	35.0	126.	280.	239.	215.	
5	29.267	29.315	.....	28.291	37.0	41.0	.....	40.0	45.0	.....	42.5	.....	.....	181.	205.	.....	183.	
6	29.530	29.480	29.557	29.522	39.0	45.0	44.0	42.0	49.0	47.0	46.0	.....	17.0	199.	247.	246.	212.	
7	29.602	29.520	29.533	29.555	36.5	48.5	46.5	39.0	52.5	49.0	46.8	.....	30.0	183.	282.	274.	235.	
8	29.346	29.217	29.219	29.261	41.0	47.0	46.0	43.5	50.0	48.0	47.2	.....	30.5	224.	283.	274.	244.	
9	29.202	29.143	29.230	29.192	52.0	51.0	46.5	58.0	56.0	48.0	54.0	.....	42.0	309.	308.	297.	315.	
10	29.336	29.200	29.193	29.243	41.0	49.5	53.0	44.0	53.0	56.0	51.0	.....	33.0	212.	294.	323.	276.	
11	29.248	29.294	.....	29.271	49.5	56.0	.....	52.0	59.5	.....	55.8	.....	.....	322.	403.	.....	381.	
12	29.154	29.094	29.198	29.149	50.0	60.0	56.5	52.5	64.0	59.0	58.5	.....	49.0	328.	465.	624.	452.	
13	.....	29.319	29.414	29.367	.....	45.0	43.0	.....	48.0	45.0	46.5	.....	40.5	.....	260.	251.	254.	
14	29.496	29.447	29.340	29.428	36.5	47.5	45.0	38.5	47.5	48.0	44.5	.....	31.0	186.	.....	266.	213.	
15	29.156	.....	29.085	29.121	46.5	.....	53.5	49.0	.....	55.5	52.3	.....	45.0	294.	.....	376.	212.	
16	29.301	29.405	29.415	29.374	36.5	39.0	36.0	38.0	43.0	39.0	40.0	.....	25.0	196.	186.	173.	188.	
17	29.409	29.267	29.128	29.268	34.0	44.0	45.0	37.0	47.5	49.0	44.5	.....	25.0	157.	242.	247.	213.	
18	29.033	29.162	29.168	29.121	50.0	54.0	43.0	32.0	60.5	45.0	45.8	.....	37.5	.....	332.	251.	242.	
19	29.249	29.153	29.038	29.147	42.0	52.0	58.0	45.0	55.5	61.0	53.8	.....	42.0	228.	342.	443.	324.	
20	28.946	.....	29.213	29.386	58.0	.....	57.0	61.0	.....	59.0	60.0	.....	47.5	443.	.....	439.	401.	
21	29.135	29.351	29.410	29.299	45.0	45.0	44.0	47.0	49.0	46.0	47.3	.....	44.0	273.	247.	262.	261.	
22	29.541	29.453	29.456	29.483	36.0	43.5	42.0	58.5	46.0	45.0	49.8	.....	34.0	.....	250.	222.	184.	
23	29.478	29.403	29.437	29.439	35.0	45.5	46.5	38.0	55.5	49.0	47.5	.....	33.0	168.	168.	216.	182.	
24	29.462	29.280	29.262	29.335	37.0	54.0	55.0	39.0	62.0	57.5	52.8	.....	35.0	194.	312.	400.	322.	
25	29.112	29.143	29.125	29.127	47.5	50.0	51.5	49.0	56.5	54.0	53.2	.....	44.5	309.	275.	348.	311.	
26	29.076	29.066	29.005	25.049	57.5	45.0	46.0	59.0	50.0	48.0	52.3	.....	35.0	457.	234.	274.	215.	
27	28.801	.....	28.863	28.832	47.5	.....	46.0	48.0	.....	47.0	47.5	.....	.....	316.	.....	217.	224.	
28	29.006	29.031	29.055	29.031	46.0	50.5	40.0	47.5	55.0	43.0	48.5	.....	53.0	291.	308.	282.	232.	
29	.....	29.078	29.116	29.097	.....	50.5	50.0	.....	53.5	53.5	52.5	.....	35.0	321.	.....	321.	321.	
30	29.005	29.002	29.209	29.072	46.0	54.0	51.0	48.0	59.0	53.0	53.3	.....	45.0	284.	351.	342.	277.	
31	29.439	29.484	29.447	29.457	38.5	42.0	44.0	42.0	47.0	46.0	45.0	.....	36.0	187.	202.	262.	217.	
Means....	29.255	29.258	29.241	29.254	.....	.....	.....	48.8	52.2	48.7	48.7	.....	.....	248.	271.	293.	255.	
June 1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	
3	29.369	29.415	29.384	29.389	41.0	52.5	52.0	44.0	56.0	55.0	51.7	.....	40.0	218.	226.	349.	264.	
4	29.458	29.278	29.247	29.328	42.0	58.0	60.0	45.0	63.0	61.0	56.3	.....	44.0	228.	416.	505.	320.	
5	29.176	29.102	29.094	29.124	53.0	60.0	63.0	55.0	66.0	67.0	62.7	.....	45.0	376.	438.	522.	447.	
6	29.029	29.049	29.075	29.051	57.5	57.6	56.0	59.0	59.0	58.5	58.8	.....	52.5	454.	439.	416.	436.	
7	29.106	29.041	29.004	29.050	55.0	51.0	60.0	57.0	58.0	53.0	59.3	.....	27.0	407.	422.	478.	416.	
8	28.884	.....	28.949	28.917	56.0	.....	57.0	58.0	.....	59.0	58.5	.....	27.5	422.	.....	439.	431.	
9	29.149	29.218	29.285	29.217	62.0	63.5	66.0	63.5	69.5	69.0	67.3	.....	52.0	536.	495.	599.	540.	
10	29.554	29.586	29.604	29.581	58.0	55.0	55.0	60.0	60.0	57.0	59.0	.....	54.5	456.	367.	407.	410.	
11	29.660	29.530	29.462	29.551	41.0	61.5	55.0	41.5	67.6	57.0	55.2	.....	45.0	251.	472.	407.	377.	
12	29.325	29.221	.....	29.273	56.0	62.0	.....	59.0	66.5	.....	67.7	.....	.....	409.	496.	.....	434.	
13	29.062	29.017	29.129	29.069	65.0	70.0	72.0	70.0	76.0	76.0	74.0	.....	49.0	550.	652.	731.	644.	
14	29.060	29.059	29.020	29.046	60.0	65.0	62.0	64.0	60.0	69.5	64.5	.....	47.5	465.	.....	456.	461.	
15	29.076	29.086	29.082	29.081	52.0	64.0	64.5	55.0	68.0	67.0	63.3	.....	54.0	349.	543.	573.	488.	
16	29.102	29.152	29.153	29.136	55.0	60.0	57.0	57.0	62.0	59.0	59.3	.....	55.0	407.	491.	439.	446.	
17	29.198	.....	29.194	29.196	51.0	.....	54.0	53.0	.....	56.0	54.5	.....	51.0	348.	.....	391.	329.	
18	29.813	28.834	28.905	29.184	50.0	54.5	49.0	51.5	57.0	52.0	53.5	.....	51.5	341.	392.	308.	347.	
19	29.118	29.276	29.306	29.233	47.5	54.0	57.0	50.0	60.5	60.0	56.8	.....	48.0	296.	332.	426.	351.	
20	29.402	29.306	29.304	29.337	49.0	62.0	66.0	51.5	66.0	68.0	61.8	.....	46.5	315.	502.	612.	476.	
21	29.932	29.082	29.069	29.361	59.0	66.5	67.0	62.0	70.0	71.0	67.7	.....	51.0	460.	636.	602.	565.	
22	29.244	29.227	29.192	29.221	55.0	62.0	62.0	66.0	66.5	66.5	64.3	.....	59.0	367.	496.	496.	453.	
23	29.228	29.226	.....	29.227	58.0	62.0	.....	60.0	65.0	.....	62.5	.....	.....	456.	516.	.....	426.	
24	29.252	29.222	29.257	29.244	61.5	71.0	74.0	64.0	74.0	82.0	73.3	.....	39.0	512.	718.	731.	654.	
25	29.341	29.314	29.338	29.331	74.0	75.0	68.0	77.0	79.5	74.5	77.0	.....	72.0	799.	807.	597.	728.	
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the northern and northwestern lakes, at Tawas City, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
952	364	.....	658	NE.....	NE.....	NW.....	23	25	16	17.0	N. 26 E.	10	10	5	.....	.....
765	762	653	727	NW.....	W.....	W.....	16	2	2	6.3	N. 53 W.	8	2	0	.....	.....
753	636	041	480	W.....	NW.....	W.....	3	25	2	9.3	N. 52 W.	8	10	0	.....	.....
488	758	800	682	SW.....	E.....	W.....	2	12	3	2.7	S. 80 E.	5	10	8	.....	.....
732	684	.....	708	NW.....	SE.....	.....	2	5	.....	1.0	S. 45 E.	10	5	10	.....	.....
744	710	772	709	E.....	E.....	W.....	3	4	2	1.7	East.....	1	2	2	.....	.....
790	727	817	771	S.....	SE.....	SE.....	2	4	5	3.7	S. 36 E.	10	7	9	.....	.....
794	766	850	777	SW.....	NE.....	SW.....	2	2	2	0.7	S. 45 W.	10	10	10	.....	.....
641	687	887	738	W.....	NE.....	NW.....	2	3	2	1.3	N. 29 W.	10	9	1	.....	.54
756	705	809	757	S.....	E.....	SW.....	2	3	3	1.7	S. 10 E.	0	0	10	.....	.....
827	791	.....	809	SW.....	S.....	.....	3	10	.....	4.3	S. 9 W.	10	8	10	.....	.....
829	780	899	836	S.....	SW.....	NW.....	15	14	16	8.3	S. 57 W.	9	10	10	.....	.32
.....	777	810	808	.....	E.....	W.....	6	2	.....	1.3	East.....	10	5	10	.....	.....
811	.....	777	794	S.....	SE.....	SE.....	2	2	3	2.0	S. 34 E.	10	3	10	.....	.14
817	.....	869	843	SW.....	.....	NW.....	40	.....	10	13.7	S. 59 W.	10	10	10	.....	.....
858	669	726	751	NW.....	NE.....	NW.....	15	25	10	11.8	North.....	5	3	10	.....	.....
712	737	710	720	W.....	SE.....	NE.....	2	15	4	4.7	S. 56 E.	10	9	8	.....	.....
.....	629	840	723	S.....	NE.....	N.....	4	10	8	4.3	N. 32 E.	10	10	8	.....	.....
762	776	825	788	SE.....	SE.....	S.....	3	3	10	5.0	S. 16 E.	10	10	8	.....	.....
825	.....	878	851	SW.....	.....	NW.....	11	.....	8	4.7	S. 81 W.	8	10	10	.....	.....
847	710	843	800	NW.....	NW.....	NW.....	11	35	8	18.0	N. 45 W.	8	10	9	.....	.....
.....	805	762	784	NW.....	S.....	SW.....	3	13	2	4.3	S. 15 W.	10	6	10	.....	.....
719	388	522	513	NW.....	NW.....	W.....	6	40	2	15.7	N. 47 W.	10	2	10	.....	.....
816	561	814	740	SW.....	NW.....	W.....	4	41	2	14.3	N. 52 W.	10	10	8	.....	.....
889	602	834	775	NE.....	E.....	W.....	2	9	2	3.0	N. 81 E.	10	4	10	.....	.....
908	646	850	801	NW.....	NE.....	SW.....	2	5	2	1.3	N. 10 E.	10	10	10	.....	.....
962	.....	923	943	NE.....	.....	N.....	16	.....	40	17.7	N. 13 E.	10	10	10	.....	1.00
886	711	750	782	NW.....	SE.....	SW.....	10	10	2	0.7	S. 45 W.	6	9	10	.....	.34
798	.....	798	798	.....	E.....	W.....	.....	4	2	0.7	East.....	0	10	5	.....	.15
850	703	864	866	SW.....	NW.....	NW.....	5	5	10	5.3	N. 64 W.	10	10	1	.....	.....
702	624	843	723	NW.....	E.....	E.....	4	14	25	9.0	N. 84 E.	9	2	3	.....	.....
797	681	779	756	.....	.....	.....	.....	.....	.....	2.3	N. 33 W.	8.3	7.3	7.6	.....	2.49
756	729	805	763	SE.....	E.....	NW.....	7	3	2	2.3	S. 60 E.	1	3	7	.....	.....
762	723	941	809	E.....	E.....	S.....	2	10	3	4.3	S. 76 E.	0	0	3	.....	.....
869	685	790	781	W.....	NE.....	N.....	2	14	2	4.7	N. 32 E.	5	9	6	.....	.....
908	878	847	878	NE.....	NE.....	NW.....	3	3	2	2.0	N. 28 E.	10	10	10	.....	.....
874	876	831	860	W.....	E.....	NE.....	2	2	10	3.3	N. 45 E.	10	10	10	.....	.20
876	.....	878	877	S.....	.....	SW.....	15	.....	2	5.7	S. 5 W.	5	7	10	.....	1.26
915	700	846	820	SW.....	SW.....	SW.....	8	17	5	10.0	S. 45 W.	10	6	3	.....	.40
880	708	874	821	E.....	E.....	E.....	6	14	3	7.7	East.....	1	8	0	.....	.....
956	715	874	848	NE.....	NE.....	NE.....	11	10	10	10.7	N. 45 E.	5	7	6	.....	.....
819	763	.....	791	SW.....	SE.....	.....	8	2	.....	2.7	S. 28 W.	5	1	.....	.....	.....
751	727	815	764	SW.....	SW.....	SW.....	12	40	3	18.3	S. 45 W.	8	4	5	.....	.54
780	.....	632	706	SW.....	SW.....	SW.....	8	45	5	19.3	S. 45 W.	0	0	0	.....	.....
805	793	867	822	W.....	S.....	SW.....	3	8	3	4.0	S. 25 W.	0	9	8	.....	.....
874	884	878	879	W.....	SW.....	SW.....	3	2	5	3.0	S. 57 W.	10	9	10	.....	.....
864	.....	872	868	W.....	.....	NW.....	4	.....	8	3.7	N. 59 W.	10	10	10	.....	.....
895	843	794	844	NW.....	NW.....	NW.....	40	18	25	27.7	N. 45 W.	10	10	10	.....	.56
820	629	822	757	NW.....	NW.....	NW.....	11	2	3	5.3	N. 45 W.	10	3	5	.....	.60
826	786	895	836	SW.....	S.....	SW.....	5	15	4	7.3	S. 16 W.	1	0	8	.....	.....
828	823	802	818	S.....	S.....	NW.....	6	10	2	5.0	S. 5 W.	8	10	10	.....	.....
708	763	763	745	NW.....	SW.....	SW.....	3	4	2	2.3	S. 73 W.	0	3	4	.....	.....
880	836	.....	858	W.....	E.....	.....	2	3	.....	0.3	East.....	10	10	.....	.....	.....
860	856	669	795	W.....	S.....	W.....	2	8	3	3.3	S. 30 W.	3	0	0	.....	.....
862	802	700	788	W.....	SW.....	S.....	2	2	2	1.6	S. 45 W.	8	10	3	.....	.....
884	712	810	802	SW.....	SW.....	NW.....	3	15	4	7.7	S. 83 W.	10	6	8	.....	.24
.....	740	816	778	.....	NW.....	NW.....	.....	6	2	2.6	N. 45 W.	.....	10	3	.....	.18
772	812	816	800	NW.....	SE.....	W.....	10	2	2	3.0	N. 51 W.	4	7	3	.....	.....
899	805	833	846	SW.....	S.....	SW.....	2	2	2	1.7	S. 34 W.	10	3	5	.....	.....
782	803	780	788	SE.....	SE.....	SW.....	2	18	2	0.7	S. 39 E.	3	3	8	.....	.....
845	776	817	812	.....	.....	.....	.....	.....	.....	2.2	S. 60 W.	5.9	6.0	5.7	.....	3.98



Reductions of the monthly meteorological register of the survey of

Date.		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
						Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
		7 a. m.	9 p. m.	Mean.	7 a. m.	9 p. m.	Mean.	7 a. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	9 p. m.	Mean.	Minimum.			
1865.																			
July		1	29.288	29.220	29.228	29.249	68	64	59	71	71	64	62.7	77	63	644	503	433	57
		2	29.297	29.355	29.408	29.353	54	60	52	58	74	61	64.3	76	53	365	331	295	12
		3	29.423	29.346	29.370	29.380	63	60	67	68	78	72	72.7	80	57	509	278	255	47
		4	29.461	29.358	29.377	29.399	68	67	65	69	70	68	69.0	80	58	671	622	577	67
		5	29.517	29.485	29.517	29.506	62	63	64	64	74	66	68.0	75	62	529	429	369	54
		6	29.435	29.350	29.394	29.393	68	68	73	74	89	82	81.7	94	60	604	403	640	58
		7	29.389	29.410	29.437	29.412	73	70	62	81	76	65	74.0	85	65	703	652	516	64
		8	29.409	29.360	29.440	29.403	60	58	58	65	68	59	64.0	70	59	451	350	469	42
		9	29.456	29.480	29.473	29.470	58	64	62	62	71	65	66.0	73	59	429	503	516	48
		10	29.426	29.370	29.327	29.314	64	60	59	67	68	60	65.0	72	57	556	411	487	45
		11	29.338	29.337	29.326	29.334	60	68	63	65	77	68	70.0	78	56	451	564	509	52
		12	29.317	29.241	29.378	29.312	65	70	56	70	80	60	70.0	82	58	550	524	386	51
		13	29.521	29.523	29.538	29.527	51	58	58	56	67	64	62.3	70	46	308	363	403	35
		14	29.533	29.469	29.463	29.495	54	60	56	57	68	61	62.3	69	46	378	411	383	37
		15	29.410	29.364	29.394	29.389	58	64	57	62	67	59	62.7	69	53	429	556	439	47
		16	29.361	29.300	29.340	29.334	52	54	51	55	58	53	55.3	60	52	349	365	345	34
		17	29.390	29.371	29.372	29.378	54	64	53	60	70	64	64.7	75	45	338	516	257	37
		18	29.329	29.271	29.239	29.280	58	62	63	65	77	68	70.0	78	50	389	356	509	41
		19	29.052	29.081	29.156	29.096	62	64	58	63	67	61	63.7	83	56	542	556	443	51
		20	29.246	29.308	29.365	29.306	60	63	64	65	74	70	69.7	78	56	451	422	516	48
		21	29.470	29.351	29.381	29.401	60	64	62	64	68	63	65.0	74	59	465	543	542	51
		22	29.551	29.540	29.596	29.562	58	64	58	61	72	65	66.0	74	57	443	489	382	44
		23	29.567	29.501	29.506	29.525	60	64	63	64	78	69	70.3	77	59	465	409	435	45
		24	29.424	29.377	29.328	29.376	67	69	66	69	78	71	72.7	79	65	635	568	572	59
		25	29.128	29.193	29.385	29.235	69.5	71	58	73	76	63	70.7	80	62	673	691	416	56
		26	29.344	29.325	29.360	29.343	64	69	65	67	76	71	71.3	81	59	556	614	537	57
		27	29.315	29.275	29.290	29.293	67	72	63	69	77	69	71.7	79	66	635	718	495	61
		28	.....	29.284	29.307	29.296	.....	65	64	.....	69	68	68.0	76	65	.....	564	543	574
		29	29.398	29.461	29.534	29.464	62	63	52	67	69	59	65.0	75	56	489	495	296	42
		30	29.643	29.654	29.626	29.641	58	59	57	62	63	59	61.3	70	59	429	447	432	43
		31	29.654	29.631	29.613	29.633	57	67	62	58	76	67	63.7	76	58	452	542	484	44
Means....			29.408	29.374	29.402	29.392	.....	.....	.....	65.0	72.4	65.0	67.4	.....	.....	496	493	462	45
			*							*						*			
Aug.		1	29.611	29.577	29.606	29.598	67	74	65	70	82	72	74.7	85	56	622	731	521	62
		2	29.603	29.550	29.556	29.570	66	78	72	73	87	76	78.7	87	66	545	836	731	74
		3	29.532	29.506	29.534	29.524	71	77	71	73	88	76	79.0	89	66	731	778	691	73
		4	29.557	29.535	29.555	29.549	65	72	77	67	74	79	73.3	79	65	591	757	900	74
		5	29.559	29.505	29.453	29.506	65	75	70	69	78	74	73.7	80	59	564	827	677	65
		6	29.180	29.181	29.221	29.194	71	74	63	73	78	65	72.0	82	61	731	755	549	62
		7	29.295	29.317	29.383	29.332	58	62	65	61	76	68	68.3	78	57	443	369	577	42
		8	29.420	29.398	29.431	29.416	61	64	65	61	68	67	65.3	75	59	537	543	521	57
		9	29.405	29.370	29.255	29.343	67	71	70	71	78	71	73.3	80	61	608	604	729	64
		10	29.181	29.200	29.310	29.230	71	72	67	72	82	69	74.3	84	59	745	651	625	57
		11	29.392	29.405	29.427	29.408	57	59	56	59	66	59	61.3	72	59	439	407	402	41
		12	29.422	29.442	29.451	29.438	58	60	56	60	69	60	63.0	71	58	456	318	324	41
		13	29.178	29.437	29.446	29.454	62	70	57	70	77	62	69.7	77	58	449	629	325	42
		14	29.438	29.400	29.418	29.419	62	69	65	65	78	69	70.7	81	50	516	528	564	53
		15	29.383	29.368	29.408	29.386	64	68	66	67	81	71	73.0	83	55	556	510	572	54
		16	29.442	29.424	29.494	29.453	58	68	53	60	77	58	65.0	82	56	456	564	326	45
		17	29.516	29.464	29.476	29.485	56	71	58	59	75	63	65.7	76	49	409	704	416	51
		18	29.498	29.449	29.445	29.464	59	65	66	61	79	69	69.7	80	50	473	431	529	52
		19	29.449	29.422	29.393	29.421	64	69	64	66	81	69	72.0	83	60	569	547	523	54
		20	29.343	.....	29.278	29.310	65	.....	66	68	.....	71	69.0	79	65	577	.....	572	574
		21	29.220	29.244	29.248	29.237	65	64	63	68	69	65	67.3	73	60	577	529	542	53
		22	29.260	29.314	29.381	29.318	56	58	56	57	68	60	61.7	71	55	436	350	286	24
		23	29.440	29.440	29.524	29.468	51	54	52	56	66	56	59.3	70	45	308	259	333	20
		24	29.629	29.611	29.635	29.625	52	58	54	54	70								

\* Mean of 30 observations.

the northern and northwestern lakes, at Detroit, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely over-cast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity, Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.859	.663	.727	.747	SW....	S.....	W.....	2.8	3.1	4.0	2.6	S. 50 W.	3	10	1		
.756	.395	.502	.551	W. NW	W. NW	Calm..	6.3	8.7	0.0	5.0	N. 67 W.	10	3	0		.89
.743	.290	.758	.597	SW....	S.....	SW....	6.7	8.7	4.0	6.0	S. 25 W.	9	2	9		
.947	.848	.843	.879	E.....	E.....	NE....	4.8	2.6	7.6	4.7	N. 66 E.	8	9	10		
.888	.511	.891	.763	NE....	E.....	Calm..	3.0	4.7	0.0	2.3	N. 73 E.	9	4	7		
.720	.295	.632	.549	SW....	SW....	SW....	4.6	8.7	3.8	5.7	S. 45 W.	0	0	0		.98
.665	.727	.836	.743	W.....	E.....	NE....	6.4	4.8	2.3	0.5	North..	2	4	6		
.731	.511	.969	.737	E. NE	NE....	NE....	4.8	4.1	1.0	3.3	N. 57 E.	10	10	0		.17
.772	.663	.836	.757	NE....	NE....	NE....	4.7	6.4	4.7	5.2	N. 45 E.	3	8	0		
.841	.601	.940	.794	NE....	NE....	NE....	5.8	8.7	4.0	6.1	N. 45 E.	10	10	10		
.731	.608	.743	.694	N.....	E.....	SW....	3.0	6.7	2.0	2.0	N. 75 E.	3	1	3		
.751	.585	.765	.700	SW....	SW....	NW....	0.7	8.7	6.0	3.7	S. 77 W.	0	10	0		
.687	.550	.675	.637	N. NW	N.....	NW....	4.0	3.6	1.8	3.0	N. 17 W.	6	5	5		
.812	.601	.713	.709	N.....	NE....	E. NE	0.3	4.1	2.0	2.0	N. 48 E.	8	9	5		
.772	.841	.878	.830	Calm..	SE....	E.....	0.0	1.6	4.0	1.7	S. 79 E.	8	10	10		
.805	.756	.864	.808	E. NE	E. NE	NE....	6.4	4.3	4.8	5.0	N. 61 E.	10	10	0		.14
.653	.704	.432	.596	N. NW	NW....	W.....	4.1	5.1	1.0	3.3	N. 40 W.	0	4	0		.36
.631	.384	.743	.586	SW....	SW....	SW....	5.0	6.0	4.8	5.2	S. 45 W.	0	5	1		
.942	.841	.825	.869	S.....	NE....	Calm..	1.8	4.8	0.0	1.3	N. 67 E.	10	10	0		
.731	.511	.704	.649	SW....	SW....	Calm..	1.6	4.1	0.0	2.0	S. 45 W.	0	9	9		.42
.780	.793	.942	.838	E. NE	NE....	NE....	2.2	4.1	3.0	3.3	N. 50 E.	10	9	10		
.825	.624	.631	.693	N.....	NE....	NE....	0.7	1.6	0.4	0.9	N. 34 E.	10	4	8		.42
.780	.427	.700	.636	SW....	SW....	SW....	1.6	1.0	1.0	1.2	S. 45 W.	6	4	5		
.896	.613	.754	.754	S.....	S.....	SE....	0.3	4.0	5.0	2.7	S. 25 E.	10	4	10		
.830	.771	.723	.775	SW....	SW....	SW....	6.0	6.8	8.7	7.1	S. 45 W.	8	1	0		
.841	.685	.708	.745	W.....	W. SW	SW....	7.0	8.0	3.6	5.9	S. 72 W.	9	7	10		
.830	.774	.700	.768	S.....	SW....	SW....	3.5	4.0	0.5	2.4	S. 25 W.	10	10	5		
.....	.796	.793	.794	.....	SW....	SW....	.....	6.7	4.0	5.3	S. 45 W.	.....	10	10		
.740	.700	.592	.677	NE....	N. NE	NE....	3.0	0.6	4.0	2.5	N. 43 E.	3	5	3		
.772	.776	.878	.809	NE....	NE....	Calm..	5.4	3.6	0.0	3.0	N. 45 E.	2	0	0		
.937	.603	.740	.760	Calm..	E. NE	E. NE	0.0	3.6	0.3	1.3	N. 67 E.	0	1	0		
.788	.627	.756	.724	.....	.....	.....	.....	.....	.....	0.1	S. 87 W.	5.9	6.1	4.4		3.37
.848	.669	.668	.728	E. NE	S.....	SE....	1.0	3.0	4.0	2.3	S. 32 E.	0	4	0		
.672	.652	.815	.713	SE....	SW....	SW....	1.0	5.0	2.0	2.3	S. 37 W.	0	3	2		
.902	.588	.771	.754	SW....	SW....	SW....	2.4	3.0	2.0	2.5	S. 45 W.	7	5	4		
.893	.903	.909	.902	NE....	N.....	N.....	3.6	2.8	0.3	2.0	N. 25 E.	10	10	10		
.796	.863	.810	.823	NE....	NE....	NE....	1.5	3.0	0.3	1.6	N. 45 E.	4	3	10		
.902	.819	.890	.878	SW....	W. SW	W.....	4.5	8.5	5.6	6.0	S. 69 W.	10	6	0		
.825	.412	.843	.693	W.....	W.....	W.....	4.8	6.0	3.0	4.6	West...	4	5	0		
1.000	.793	.893	.895	S.....	SW....	S.....	4.0	5.0	0.4	2.9	S. 24 W.	10	7	5		1.08
.802	.693	.949	.815	S.....	S.....	S.....	3.0	4.8	4.8	4.2	South..	5	9	10		
.950	.595	.896	.814	W.....	NW....	N. NW	0.5	4.0	3.0	2.3	N. 39 W.	10	4	3		.10
.878	.636	.819	.778	N.....	N.....	NE....	6.0	5.0	3.8	4.7	N. 11 E.	10	4	0		
.880	.564	.765	.736	N.....	E. SE	SE....	4.0	6.0	0.3	2.8	N. 43 E.	6	1	0		
.613	.689	.718	.673	E. NE	NE....	E. NE	3.0	1.6	0.3	1.7	N. 61 E.	3	4	0		
.836	.613	.796	.748	S.....	S.....	S.....	0.5	3.0	2.0	1.8	South..	1	3	0		
.841	.483	.754	.693	S.....	W. NW	NW....	0.4	4.8	5.6	3.3	N. 57 W.	0	3	0		
.880	.608	.698	.729	N.....	NE....	NE....	1.0	3.1	1.6	1.8	N. 38 E.	9	2	0		
.819	.812	.723	.783	N.....	NE....	NE....	3.0	2.0	3.0	2.5	N. 28 E.	0	0	0		
.882	.434	.846	.721	SE....	S. SW	SW....	1.0	4.8	3.8	2.9	S. 26 W.	0	0	9		
.891	.518	.747	.719	W.....	S.....	S.....	1.0	6.0	2.8	3.0	S. 7 W.	4	8	10		
.843	.....	.754	.799	S.....	.....	SW....	2.0	.....	1.0	0.9	S. 15 W.	3	.....	0		
.843	.747	.890	.827	SW....	NE....	NE....	2.0	4.0	3.6	1.8	N. 45 E.	10	10	10		.04
.936	.511	.765	.737	NE....	NE....	N. NE	3.6	8.6	3.6	5.0	N. 41 E.	10	4	0		.60
.687	.405	.747	.613	N.....	W. NW	NW....	4.8	5.7	0.4	3.0	N. 39 W.	0	6	0		
.867	.441	.703	.670	NE....	SW....	SW....	0.3	4.0	0.6	1.4	S. 45 W.	0	1	0		
.876	.486	.776	.713	SW....	SW....	SW....	0.3	4.8	1.6	2.2	S. 45 W.	0	1	0		
.884	.470	.613	.656	SW....	SW....	Calm..	0.5	4.0	0.0	1.5	S. 45 W.	0	2	0		
.776	.424	.828	.676	N.....	NE....	NE....	0.4	0.3	0.6	0.4	N. 32 E.	10	5	4		
.939	.735	.939	.871	E.....	E. NE	E.....	3.8	3.6	0.4	2.7	N. 81 E.	10	10	10		.64
.944	.854	.890	.896	E.....	SE....	E.....	4.0	2.6	1.8	2.7	S. 77 E.	10	10	3		
.947	.613	.900	.820	E. NE	S.....	S.....	0.3	4.8	3.0	2.6	S. 2 E.	2	3	4		
.949	.584	.815	.783	S.....	S.....	S.....	1.0	5.0	3.0	3.0	South..	3	7	9		
.858	.620	.804	.763	.....	.....	.....	.....	.....	.....	0.3	S. 43 W.	4.9	4.7	3.3		2.46

Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to tempera- ture of 32° Fahr., expressed in United States inches and deci- mals.	TEMPERATURE—FAHRENHEIT.												VAPOUR.				
						Wet bulb, or point of evaporation.		Dry bulb, or tem- perature of the open air.						Elasticity, in U. S. inches and deci- mals.				
		7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.
1865.																		
Sept.	1	29.451	29.407	29.378	29.412	68	69	67	69	71	69	69.7	78	62	671.	622.	635.	629.
	2	29.350	29.382	29.378	29.370	72	74	64	72	77	68	72.3	83	67	724.	739.	543.	705.
	3	29.330	29.320	29.362	29.337	70	73	72	74	79	73	75.3	85	69	679.	730.	711.	707.
	4	29.395	29.394	29.430	29.406	71	75	69	72	79	72	74.3	87	70	745.	814.	692.	750.
	5	29.392	29.351	29.343	29.362	71	69	64	74	81	69	74.7	84	64	712.	547.	529.	594.
	6	29.339	29.283	29.318	29.313	60	69	68	66	78	71	71.7	80	62	438.	528.	644.	551.
	7	29.345	29.310	29.089	29.248	68	70	70	68	78	72	72.7	80	62	625.	625.	706.	617.
	8	29.046	29.090	29.182	29.106	70	68	67	73	79	69	73.7	84	64	693.	537.	635.	622.
	9	29.335	29.331	29.365	29.344	64	69	73	67	82	78	75.7	87	64	556.	534.	744.	611.
	10	29.384	29.346	29.354	29.361	68	71	70	74	84	73	77.0	87	65	604.	583.	683.	623.
	11	29.352	29.350	29.416	29.373	66	70	67	70	79	70	73.0	81	58	526.	612.	622.	619.
	12	29.473	29.449	29.474	29.465	67	75	71	71	80	74	75.0	83	56	602.	700.	712.	704.
	13	29.511	29.449	29.502	29.487	70	79	70	72	86	73	77.0	88	53	706.	895.	630.	743.
	14	29.524	29.514	29.578	29.539	71	80	68	74	87	71	77.3	88	58	718.	928.	644.	763.
	15	29.631	29.623	29.607	29.620	66	70	68	68	77	71	72.0	78	54	612.	639.	644.	632.
	16	29.610	29.356	29.470	29.539	62	76	70	63	80	73	73.7	81	53	476.	843.	693.	671.
	17	29.366	29.325	29.439	29.377	73	76	70	75	81	73	76.3	83	53	784.	829.	623.	729.
	18	29.486	29.533	29.621	29.547	52	57	54	53	61	57	57.0	68	47	375.	872.	373.	547.
	19	29.660	29.620	29.621	29.634	52	63	62	54	69	64	62.3	71	42	362.	495.	529.	462.
	20	29.577	29.550	29.556	29.561	55	67	63	57	70	65	64.0	72	46	407.	622.	549.	526.
	21	29.526	29.521	29.538	29.528	60	70	63	62	74	65	67.0	78	47	491.	679.	549.	573.
	22	29.561	29.553	29.546	29.553	65	73	67	68	78	70	72.0	80	49	577.	744.	622.	649.
	23	29.582	29.514	29.536	29.544	65	73	68	67	79	70	72.0	82	58	591.	730.	658.	692.
	24	29.476	29.403	29.389	29.423	64	73	70	66	76	71	71.0	80	56	569.	771.	720.	687.
	25	29.424	29.440	29.505	29.456	62	71	67	64	78	69	70.3	81	51	529.	664.	635.	608.
	26	29.593	29.577	29.620	29.597	59	68	56	61	70	58	63.0	71	50	473.	652.	422.	519.
	27	99.651	29.624	29.634	29.636	50	70	61	51	75	63	63.0	78	46	342.	666.	510.	537.
	28	29.636	29.565	29.551	29.584	66	74	68	68	76	70	71.3	78	47	612.	812.	652.	694.
	29	29.487	29.367	29.346	29.400	67	76	59	68	79	60	69.0	80	46	642.	856.	457.	664.
	30	29.332	29.340	29.316	29.329	56	56	55	58	65	61	61.3	70	49	422.	330.	354.	369.
Means....		29.461	29.435	29.449	29.448	.....	.....	.....	66.8	76.9	68.7	70.8	.....	.....	582.	697.	611.	630
Oct.	1	29.304	29.244	29.198	29.249	52	58	50	59	65	57	60.3	71	46	296.	329.	268.	312
	2	29.314	29.331	29.369	29.338	44	50	48	46	56	52	51.3	60	41	262.	282.	282.	275
	3	29.384	29.358	29.341	29.361	46	51	44	47	56	46	49.7	54	40	297.	308.	282.	296
	4	29.413	29.411	29.480	29.435	43	50	43	45	55	46	48.7	54	35	251.	295.	228.	291
	5	28.508	29.521	29.591	29.540	46	55	46	48	61	48	52.3	54	40	224.	354.	224.	327
	6	29.671	29.622	29.580	29.626	43	60	50	46	66	53	55.0	61	36	238.	432.	321.	332
	7	29.486	29.384	29.385	29.418	56	70	64	59	77	66	67.3	73	52	409.	639.	529.	532
	8	29.366	29.400	29.403	29.390	60	64	46	63	69	49	60.3	68	47	472.	529.	271.	492
	9	29.386	29.330	29.376	29.364	56	72	63	58	80	65	67.7	78	45	422.	677.	549.	548
	10	20.451	29.408	29.436	29.432	58	70	62	60	78	65	67.7	78	54	456.	625.	516.	574
	11	29.477	29.349	29.368	29.398	53	66	56	55	74	60	63.0	76	49	376.	532.	396.	453
	12	29.491	29.488	29.521	29.500	50	54	44	52	56	46	51.3	62	45	334.	391.	282.	324
	13	29.473	29.379	29.443	29.432	47	50	45	49	56	47	50.7	58	40	297.	282.	273.	291
	14	29.231	29.068	29.101	29.133	43	54	49	44	61	51	52.0	63	39	264.	325.	321.	323
	15	29.207	29.261	29.410	29.293	45	48	38	47	49	39	45.0	54	38	273.	322.	216.	299
	16	29.522	29.494	29.412	29.476	39	48	37	41	52	38.5	43.8	60	38	212.	282.	201.	292
	17	29.464	29.332	29.233	29.370	42	48	48	44	52	49	48.3	54	43	241.	282.	282.	282
	18	29.048	29.041	29.074	29.054	48	55	44	50	58	46	51.3	58	39	309.	393.	282.	281
	19	28.917	28.708	28.948	28.858	43	49	40	44	57	42	47.7	67	41	264.	242.	221.	242
	20	29.060	29.043	29.182	29.095	38	45	39	40	57	42	46.3	63	38	203.	142.	199.	151
	21	29.418	29.455	29.530	29.468	35	43	33	37	52	35	41.3	53	....	178.	160.	162.	167
	22	29.518	29.449	29.426	29.464	45	50	44	48	59	47	51.3	59	49	260.	242.	249.	257
	23	29.582	29.600	29.687	29.623	42	46	37	43	52	40	45.0	52	37	254.	222.	181.	172
	24	29.724	29.693	29.662	29.693	38	38	39	40	43	42	41.7	46	36	203.	164.	199.	182
	25	29.591	29.525	29.498	29.538	41	45	44	43	50	47	46.7	53	45	231.	234.	249.	242
	26	29.460	29.443	29.446	29.450	42	46	38	43	47	39	43.0	49	36	254.	297.	216.	257
	27	29.432	29.325	29.215	29.324	35.5	35	34	35.5	36	34	35.2	38	....	208.	191.	196.	194
	28	29.067	29.193	29.417	29.226	34	34	32	34	34.5	34	34.2	38	....	196.	189.	155.	186
	29	29.580	29.598	29.655	29.611	33	39	34	36	43	36	38.3	46	31	149.	186.	170.	168
	30	29.743	29.655	29.617	29.672	30	40	35	31	46	36	37.7	49	26	155.	169.	191.	172
	31	29.562	29.598	29.666	29.609	39	41											

the northern and northwestern lakes, at Detroit, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation in U. S. inches and decim.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
.947	.899	.896	.914	SE	E	E	1.8	1.0	2.0	1.5	S. 74 E.	10	10	10		.68
1.000	.862	.793	.885	E	SW	SW	1.0	3.6	4.1	2.3	S. 39 W.	10	7	4		.30
.810	.738	.950	.833	SW	SW	SW	0.3	1.7	0.8	0.9	S. 45 W.	10	4	0		
.950	.822	.852	.858	SW	SW	W	0.4	0.4	0.4	0.4	S. 60 W.	0	0	0		.28
.856	.518	.747	.707	N	N	NE	0.6	1.7	4.1	2.0	N. 29 E.	6	1	4		.10
.685	.613	.850	.716	NE	NE	NE	1.6	1.0	3.0	1.9	N. 45 E.	10	0	0		.26
1.000	.653	.900	.851	SW	SE	SE	1.0	1.0	4.6	1.9	S. 35 E.	8	9	10		
.854	.542	.896	.764	SW	SW	SW	4.1	8.1	6.4	6.2	S. 45 W.	10	3	6		.22
.841	.489	.776	.702	SW	SW	SW	3.1	4.2	3.1	3.5	S. 45 W.	4	0	0		.16
.720	.501	.854	.692	SW	SW	N	0.3	4.1	8.7	2.1	N. 29 W.	4	3	4		
.799	.618	.848	.755	Calm	N	NE	0.0	4.3	3.7	2.5	N. 21 E.	1	6	0		
.802	.782	.856	.813	NE	E	SE	1.6	3.4	4.6	2.7	S. 75 E.	2	3	0		
.900	.721	.854	.825	SE	SE	SW	0.4	3.2	8.7	3.0	S. 24 W.	4	1	10		
.856	.724	.850	.810	SW	SW	SW	6.7	3.2	2.6	4.1	S. 45 W.	4	4	0		.16
.895	.689	.850	.811	NE	NE	NE	4.1	3.6	4.7	4.1	N. 45 E.	3	0	0		.02
.695	.824	.854	.791	SE	SE	SW	3.7	3.2	2.6	2.3	S. 25 E.	0	0	0		
.904	.784	.854	.847	SW	SW	N	1.6	8.7	9.7	2.7	N. 72 W.	3	10	10		
.932	.826	.812	.857	N	N	N	6.7	7.8	1.8	5.4	North	10	0	0		.34
.867	.700	.888	.818	NE	NE	Calm	2.1	1.6	0.0	1.2	N. 45 E.	0	0	0		
.874	.848	.890	.870	SW	SW	SW	1.6	2.1	1.6	1.8	S. 45 W.	3	0	0		
.884	.810	.890	.861	SW	SW	SW	3.2	2.4	1.6	2.4	S. 45 W.	4	0	0		
.843	.776	.848	.822	S	S	SW	0.7	1.6	2.3	1.4	S. 22 W.	9	2	0		
.893	.738	.898	.843	SW	SW	SW	0.4	1.7	2.6	1.6	S. 45 W.	7	4	0		
.891	.860	.949	.900	NE	NE	NE	3.8	4.6	3.8	4.0	N. 45 E.	10	10	3		
.888	.693	.896	.826	NE	NE	NE	1.6	2.1	2.8	2.1	N. 45 E.	8	0	0		
.882	.898	.876	.885	Calm	NE	NE	0.0	2.7	0.8	1.1	N. 45 E.	0	0	0		
.929	.768	.886	.861	E	E	S	1.6	2.1	3.7	1.8	S. 45 E.	0	0	0		
.895	.906	.898	.900	S	S	S	1.6	1.7	2.6	2.0	South	0	0	0		
.947	.865	.940	.917	SW	W	W	4.1	3.2	4.8	3.7	S. 75 W.	2	0	10		
.876	.535	.659	.690	W	W	W	1.6	8.6	4.3	4.8	West	2	9	0		
.870	.733	.860	.821							0.4	S. 56 W.	4.8	2.9	2.3		2.52
.592	.631	.577	.600	W	SW	SW	3.9	6.8	5.0	5.0	S. 56 W.	0	0	0		
.843	.627	.727	.732	NW	NW	NW	6.8	8.6	0.3	5.2	N. 45 W.	2	6	10		
.923	.687	.843	.818	NW	NW	NW	6.7	6.3	1.0	4.7	N. 45 W.	10	10	9		
.840	.681	.767	.763	NW	NW	NW	6.4	4.2	2.0	4.1	N. 45 W.	0	2	0		
.850	.659	.850	.786	NW	NW	Calm	3.6	2.0	0.0	1.8	N. 45 W.	0	4	0		
.767	.685	.798	.750	Calm	S	S	0.0	1.6	2.0	1.2	South	0	0	6		
.819	.689	.891	.800	SW	SW	E	1.0	2.6	3.0	0.9	S. 11 E.	2	4	7		
.831	.747	.781	.786	W	W	Calm	4.1	1.6	0.0	1.9	West	10	2	0		.02
.876	.661	.890	.809	SW	SW	Calm	1.6	4.2	0.0	1.9	S. 45 W.	0	4	0		
.880	.653	.836	.790	SW	SW	SW	4.8	3.6	0.3	2.9	S. 45 W.	0	1	0		
.869	.634	.765	.756	W	W	Calm	0.4	1.4	0.0	0.6	West	10	2	0		
.861	.872	.843	.859	N	N	N	2.4	3.6	4.8	3.6	North	10	6	0		
.853	.627	.817	.776	NE	NE	NE	6.7	6.4	1.8	5.0	N. 45 E.	9	4	0		
.918	.606	.859	.794	N	E	NE	2.1	2.6	0.6	1.3	N. 50 E.	9	2	10		
.847	.926	.907	.893	N	N	NW	2.6	9.8	3.0	5.0	N. 8 W.	10	9	0		
.824	.727	.860	.804	NW	NW	NW	1.3	2.6	0.3	1.3	N. 45 W.	0	4	0		.02
.836	.727	.926	.830	W	S	SE	0.3	1.4	4.8	1.9	S. 33 E.	6	10	10		
.856	.816	.843	.838	S	S	SW	2.8	4.6	0.4	2.6	S. 2 W.	8	8	5		.04
.918	.521	.829	.756	W	SW	NW	6.4	15.0	5.0	7.3	S. 71 W.	9	9	0		
.820	.305	.744	.623	W	W	W	4.0	15.0	1.8	6.9	West	0	3	0		
.807	.411	.797	.672	W	W	W	1.6	9.6	0.3	3.8	West	0	1	0		
.777	.484	.772	.678	W.SW	SW	SW	0.4	3.8	0.3	1.5	S. 47 W.	1	5	10		
.916	.598	.732	.749	N	E	E	2.6	6.8	2.0	3.1	N. 73 E.	10	1	0		.03
.820	.587	.744	.717	NE	NE	NE	3.0	1.6	5.8	3.4	N. 45 E.	9	9	9		
.833	.646	.772	.750	NE	NE	NE	6.0	4.0	2.8	4.3	N. 45 E.	10	10	10		
.916	.923	.907	.915	NE	NE	NE	5.6	6.8	5.0	5.7	N. 45 E.	10	10	10		.65
1.000	.900	1.000	.967	NE	NE	N	6.4	7.0	8.6	7.0	N. 27 E.	10	10	10		1.16
1.000	.948	.792	.913	N	N.NW	N.NW	4.6	5.6	6.0	5.3	N. 16 W.	10	10	1		1.60
.705	.669	.802	.725	W	W	W	3.0	7.8	2.0	4.3	West	2	6	0		
.893	.543	.900	.779	SW	S	S	0.3	6.0	2.0	2.7	S. 2 W.	9	7	10		
.910	.617	.824	.784	SW	SW	W	3.6	4.2	1.8	3.0	S. 33 W.	10	10	9		
.852	.671	.820	.781							1.3	N. 47 W.	5.7	5.4	4.1		3.52



*Reductions of the monthly meteorological register of the survey of*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.	TEMPERATURE—FAHRENHEIT.											VAPOR.							
						Wet bulb, or point of evaporation.		Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.						
		7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.		
1865.																				
Nov.	1	29.452	29.379	29.366	29.399	44	46	39	46	50	40	45.3	52	36	262	275	225	244		
	2	29.382	29.451	29.483	29.439	36	43	39	38	47	40	41.7	53	36	186	225	225	214		
	3	29.432	29.397	29.354	29.401	32	48	38	34	51	39	41.3	50	30	155	236	214	214		
	4	29.234	29.145	29.208	29.196	36	40	36	38	43	37	39.3	43	33	186	232	199	214		
	5	29.377	29.471	29.547	29.465	32	34	28	33	37	30	33.3	39	28	162	157	130	133		
	6	29.395	29.152	29.515	29.364	27	41	33	30	45	37	37.3	41	28	113	205	126	121		
	7	29.669	29.775	29.732	29.725	27	36	32	29	40	35	34.7	43	26	124	160	142	142		
	8	29.597	29.481	29.484	29.521	29	44	40	30	50	43	41.0	52	23	149	236	207	174		
	9	29.654	29.765	29.831	29.750	30	41	31	33	45	33	37.0	58	30	132	205	151	163		
	10	29.878	29.880	29.982	29.913	30	36	29	31	38	30	33.0	56	29	155	186	142	142		
	11	29.914	29.900	29.909	28.908	26	42	38	28	44	40	37.3	58	28	117	241	200	187		
	12	29.908	29.718	29.716	29.781	26	50	38	28	54	40	40.7	57	24	117	232	205	200		
	13	29.575	29.502	.....	29.539	36	54	....	39	61	....	50.0	....	....	173	325	....	232		
	14	29.431	29.275	29.338	29.348	30	57	43	32	63	45	46.7	65	28	144	385	251	261		
	15	29.321	29.289	29.303	29.304	43	54	55	45	60	57	54.0	64	34	251	332	407	312		
	16	29.307	29.223	29.230	29.253	45	62	52	47	68	53	56.0	69	34	273	476	375	351		
	17	24.221	29.356	29.448	29.342	50	54	42	51	57	44	50.7	58	33	348	378	241	242		
	18	29.528	29.495	29.490	29.504	35	40	35	37	45	38	40.0	55	32	178	182	165	151		
	19	25.566	29.576	29.560	29.567	38	45	35	30	57	38	41.7	51	26	130	142	165	146		
	20	29.487	29.367	29.364	29.406	33	45	38	35	49	40	41.3	53	26	162	247	203	204		
	21	29.302	29.239	29.214	29.252	28	36	40	30	42	41	37.7	52	26	130	134	235	166		
	22	29.173	29.163	29.160	29.165	36	39	37	38	41	39	39.3	43	36	186	212	194	187		
	23	29.195	29.338	29.457	29.330	34	39	35	36	42	37	38.3	42	34	170	199	175	162		
	24	29.516	29.533	29.479	29.509	32	40	34	34	43	36	37.7	42	30	155	208	170	171		
	25	29.466	29.394	29.514	29.458	35	46	32	37	50	34	40.3	51	33	178	258	155	181		
	26	29.531	29.514	29.512	29.519	30	43	31	32	47	33	37.3	46	29	144	235	151	171		
	27	29.577	29.578	29.776	29.644	28	36	27	30	41	28	33.0	43	26	130	147	136	126		
	28	29.677	29.522	29.399	29.533	28	35	27	30	37	29	32.0	42	21	130	178	124	144		
	29	29.293	29.231	29.254	29.259	30	37	26	31	41	27	33.0	43	26	155	168	129	151		
	30	29.279	29.212	28.670	29.054	26	36	32	28	37	34	33.0	43	22	117	199	155	157		
Means....		29.478	29.444	28.459	29.461	....	....	....	34.7	47.5	37.8	40.1	....	....	167	236	193	206		
Dec.	1	28.991	29.078	29.124	29.064	32	32	30	33	34	32	33.0	39	30	168	151	144	158		
	2	28.953	28.903	29.101	28.986	35	44	40	37	47	42	42.0	46	31	178	245	221	216		
	3	29.342	29.290	.....	29.111	35	55	....	37	58	....	47.5	59	33	170	393	....	292		
	4	29.332	29.533	29.588	29.484	51	43	40	54	47	42	47.7	59	31	335	225	221	290		
	5	29.801	29.745	29.675	29.740	28	35	30	29	38	33	33.3	43	29	142	165	132	146		
	6	29.602	29.448	29.293	29.448	23	32	34	24	34	35	31.0	44	28	112	155	183	150		
	7	29.185	29.394	29.603	29.394	31	35	23	33	37	25	31.7	36	21	151	187	100	146		
	8	29.770	29.781	29.681	29.744	18	30	22	19	33	24	25.3	48	17	087	132	085	105		
	9	29.426	29.228	29.128	29.261	30	30	31	32	33	33	32.7	39	17	144	132	151	145		
	10	29.235	29.157	29.195	29.196	23	35	36	25	40	39	34.7	41	16	100	139	173	137		
	11	29.254	29.182	29.112	29.183	36	47	47	38	52	49	46.3	53	35	186	257	227	243		
	12	29.054	29.075	29.556	29.228	50	48	17	52	53	18	41.0	56	18	334	269	028	229		
	13	29.769	29.665	29.673	29.702	16	18	13	17	21	15	17.7	22	13	078	065	056	066		
	14	29.726	29.789	29.820	29.728	5	12	7	6	14	8	9.3	15	3	043	052	048	048		
	15	29.744	29.699	29.700	29.714	6	11	6	7	13	8	9.3	16	2	046	049	034	043		
	16	29.586	29.537	29.349	29.491	6	13	14	7	16	16	13.0	22	5	046	044	029	050		
	17	29.433	29.458	29.536	29.476	16	25	24	18	29	25	24.0	30	15	067	089	117	091		
	18	29.501	29.383	29.200	29.361	27	32	36	30	35	37	34.0	37	23	113	155	199	156		
	19	29.101	29.135	29.417	29.218	40	33	23	42	36	25	34.3	44	24	221	149	100	157		
	20	29.440	29.270	28.767	29.159	19	22	23	21	24	24	23.0	26	18	080	094	112	096		
	21	29.381	29.417	29.664	29.487	16	14	9	17	17	10	14.7	25	10	078	048	074	061		
	22	29.570	29.726	30.022	29.773	4	13	12	5	16	13	11.7	16	1	041	044	067	049		
	23	29.932	29.755	29.352	29.680	2	16	22	3	18	24	15.0	24	1	036	067	095	086		
	24	29.093	28.975	28.924	28.997	32	33	32	33	38	34	35.0	38	24	162	123	155	149		
	25	29.062	29.141	29.171	29.125	26	32	37	29	35	42	35.3	44	27	106	142	153	134		
	26	29.136	29.092	29.060	29.096	33	39	33	35	41	35	37.0	42	27	162	212	162	179		
	27	29.210	29.445	29.543	29.399	32	35	32	34	38	34	45.3	38	29	155					

\* Mean of 30 observations.

he northern and northwestern lakes, at Detroit, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely over-cast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.843	.716	.910	.823	SE.....	SE.....	SW.....	4.1	2.6	1.0	1.9	S. 35 E.	10	10	10		
.811	.698	.910	.806	SW.....	SW.....	SW.....	4.6	3.3	1.6	3.2	S. 45 W.	10	10	7		.04
.792	.790	.907	.830	S.....	S.....	S.....	2.6	1.6	0.3	1.5	South ..	10	3	0		
.811	.750	.903	.821	SW.....	SW.....	NW.....	4.6	3.2	4.8	2.0	S. 77 W.	10	10	10		
.893	.712	.782	.796	NW.....	NW.....	W.....	4.3	6.4	5.0	5.0	N. 59 W.	2	8	8		
.675	.684	.619	.659	NW.....	NW.....	NW.....	3.4	8.7	4.0	5.4	N. 45 W.	2	10	6		
.775	.675	.698	.706	E.....	E.....	E.....	4.1	7.5	3.8	5.1	East.....	10	4	6		
.890	.704	.750	.781	S.....	S.....	Calm ..	4.7	6.4	0.0	3.7	South ..	3	9	0		
.703	.684	.800	.729	N.....	N.....	NE.....	2.4	1.6	1.0	1.7	N. 9 E.	9	2	0		
.893	.811	.890	.865	NE.....	NE.....	NE.....	1.0	2.6	3.0	2.2	N. 45 E.	6	10	0		
.768	.836	.820	.808	NE.....	NE.....	NE.....	1.6	1.0	1.4	1.3	N. 45 E.	6	6	0		
.768	.738	.820	.775	SW.....	SW.....	SW.....	3.1	1.6	2.4	2.4	S. 45 W.	4	2	0		
.726	.606		.666	SW.....	W.....		1.4	3.2		2.2	S. 76 W.	0	6	0		
.794	.670	.840	.768	S.....	S.....	S.....	1.6	2.1	2.2	2.0	South ..	10	4	0		
.840	.653	.874	.789	SW.....	SW.....	SW.....	1.6	4.8	1.4	2.6	S. 45 W.	10	2	0		
.847	.695	.932	.825	S.....	S.....	S.....	1.6	4.8	3.6	3.3	South ..	0	6	2		
.929	.812	.836	.859	W.....	W.....	W.....	9.6	8.4	0.4	6.1	West.....	9	4	0		
.807	.607	.719	.711	N.....	N.....	N.....	1.2	1.0	0.3	0.8	North....	10	10	6		
.782	.305	.719	.569	SW.....	SW.....	SW.....	4.0	3.1	0.3	2.5	S. 45 W.	10	6	0		
.797	.710	.820	.776	SE.....	S.....	S.....	0.4	3.1	3.0	2.1	S. 2 E.	6	9	0		
.782	.500	.912	.731	S.....	NW.....	NW.....	0.3	0.6	4.0	1.4	N. 48 W.	8	3	10		
.811	.824	.816	.817	SW.....	SW.....	SW.....	2.4	3.1	0.3	1.9	S. 45 W.	4	10	10		.01
.802	.744	.807	.784	NW.....	NW.....	NW.....	1.6	3.2	3.6	2.8	N. 45 W.	10	10	8		
.792	.750	.802	.781	S.....	S.....	Calm ..	2.1	1.6	0.0	1.2	South ..	4	3	0		
.807	.716	.792	.772	N.....	N.....	NW.....	2.1	1.6	0.3	1.3	N. 3 W.	4	0	2		
.791	.698	.800	.764	W.....	W.....	Calm ..	1.6	2.1	0.0	1.2	West.....	0	8	0		
.782	.567	.883	.744	NW.....	NW.....	E.....	6.7	9.8	2.1	5.0	N. 41 W.	10	8	10		
.772	.807	.775	.788	E.....	E.....	E.....	3.0	3.0	2.8	2.9	East.....	10	10	6		
.893	.653	.880	.809	NE.....	NE.....	E.....	1.6	0.6	2.1	1.3	N. 67 E.	10	2	3		
.768	.903	.792	.821	SW.....	S.....	W.....	3.6	4.8	2.1	2.9	S. 32 W.	4	10	10		
.805	.699	.821	.773							0.8	S. 71 W.	6.7	6.5	3.9		.05
.893	.792	.794	.826	SW.....	SW.....	SW.....	8.7	2.1	3.0	4.6	S. 45 W.	8	9	10		.16
.807	.772	.833	.804	S.....	S.....	Calm ..	0.7	1.0	0.0	0.6	South ..	10	10	10		
.802	.816		.809	NE.....	NE.....		0.3	2.1		0.8	N. 45 E.	10	10			
.802	.698	.833	.778	W.....	W.....	W.....	6.7	3.8	2.6	4.4	West.....	10	10	10		.63
.887	.719	.703	.770	Calm ..	NW.....	Calm ..	0.0	1.3	0.0	0.4	N. 45 W.	4	2	0		
.868	.792	.898	.863	Calm ..	Calm ..	N. NW.	0.0	0.0	4.0	1.3	N. 22 W.	4	10	10		
.800	.807	.746	.784	N.....	N. NW.	Calm ..	2.1	6.4	0.0	2.8	N. 17 W.	10	2	0		.01
.845	.703	.738	.762	W.....	W.....	W.....	0.3	3.2	0.3	1.3	West.....	0	0	0		
.794	.703	.800	.766	SE.....	SW.....	W.....	1.2	4.6	4.8	3.2	S. 65 W.	10	10	10		
.746	.557	.726	.676	S.....	S.....	SW.....	1.6	1.0	0.4	0.9	S. 4 W.	10	10	0		.14
.811	.660	.853	.775	S.....	SE.....	S.....	1.6	3.1	6.4	3.7	S. 12 E.	0	8	10		
.861	.667	.840	.789	S.....	SW.....	W.....	4.6	8.7	9.6	6.3	S. 55 W.	0	4	0		.01
.834	.570	.648	.684	W.....	W.....	W.....	8.7	6.4	9.8	8.0	West.....	6	8	2		
.760	.635	.777	.724	SW.....	W. SW.	W.....	10.6	12.4	9.4	10.3	S. 67 W.	0	6	0		
.769	.623	.553	.648	SW.....	SW.....	SW.....	10.6	7.5	3.2	7.1	S. 45 W.	0	8	0		
.769	.492	.659	.640	SW.....	SW.....	SW.....	4.8	3.6	3.3	3.8	S. 45 W.	10	9	0		
.682	.556	.872	.703	SE.....	SE.....	SE.....	1.0	2.3	0.6	1.3	S. 45 E.	2	0	0		
.675	.792	.903	.790	SE.....	SE.....	SE.....	1.4	2.7	0.8	1.6	S. 45 E.	10	10	10		
.829	.705	.746	.760	W.....	W.....	W.....	5.3	8.4	8.7	7.5	West.....	10	10	0		.20
.712	.738	.868	.773	S.....	E.....	NE.....	0.4	9.4	2.3	4.0	N. 84 E.	10	10	10		
.834	.509	.791	.711	W.....	W.....	W.....	1.6	5.3	8.7	5.2	West.....	2	4	10		.24
.750	.492	.810	.684	SW.....	SW.....	W.....	2.1	3.3	0.9	2.0	S. 50 W.	10	6	2		.02
.730	.682	.738	.717	SW.....	E.....	S.....	2.7	3.1	3.6	2.0	S. 17 W.	0	1	0		
.893	.537	.792	.741	S.....	S.....	SE.....	0.3	0.4	4.3	1.7	S. 38 E.	8	10	0		
.665	.698	.577	.647	Calm ..	NE.....	Calm ..	0.0	0.6	0.0	0.7	N. 45 E.	0	0	0		
.797	.844	.797	.806	Calm ..	Calm ..	SW.....	0.0	0.0	3.4	1.0	S. 45 W.	10	10	10		
.792	.719	.792	.778	NW.....	NW.....	Calm ..	2.6	0.8	0.0	1.0	N. 66 W.	10	4	10		
.797	.628	.775	.733	W.....	W.....	W.....	2.6	2.2	4.7	3.2	West.....	10	9	5		
.738	.665	.754	.719	W.....	W.....	SE.....	2.1	1.6	2.2	1.0	S. 71 W.	10	10	4		
.860	.628	.754	.747	SW.....	SW.....	SW.....	1.6	1.4	0.6	1.0	S. 45 W.	8	1	0		
.754	.619	.698	.690	SE.....	SE.....	NE.....	1.2	3.6	2.4	2.0	S. 75 E.	3	10	0		
.793	.671	.769	.745							2.0	S. 63 W.	6.3	6.8	3.4		1.41

† Snow.



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
					7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.					°	°	°	°	°	°	°	°	°					
Jan'y	1	29.559	29.620	29.667	29.615	24	29	17	26	33	18	25.7	38	13	.106	.114	.082	.112
	2	29.648	29.546	29.458	29.551	12	23	20	13	25	22	20.0	33	8	.063	.100	.065	.092
	3	29.346	29.315	29.371	29.344	20	28	21	22	31	25	26.0		20	.085	.119	.071	.092
	4	29.443	29.482	29.702	29.542	16	14	6	17	17	7	13.7	22	7	.072	.045	.045	.057
	5	29.702	29.619	29.715	29.679	9	14	13	10	16	14	13.3	18	-3	.054	.059	.071	.061
	6	29.727	29.617	29.775	29.706	14	21	17	16	23	19	19.3	26	-14	.059	.090	.071	.073
	7	30.142	30.324	30.464	30.310	11	9	2	12	10	3	08.3	22	-3	.061	.054	.036	.051
	8	30.630	30.610	30.494	30.578	11		2	12		3	07.0	12	-8	.061		.036	.058
	9	30.411	30.257	30.123	30.264	2	20	13	3	23	15	13.7	24	-2	.036	.074	.066	.058
	10	29.878	29.605	29.525	29.669	18	24	25	20	27	27	24.7	29	12	.076	.095	.112	.094
	11	29.512	29.543	29.224	29.426	27	31	32	29	35	33	32.3	36	27	.124	.139	.162	.141
	12	29.110	28.996	29.963	29.356	33	36	42	34	38	43	38.3	43	32	.175	.186	.254	.204
	13	29.126	29.186	29.380	29.231	33	29	24	34	33	26	31.0	43	26	.175	.114	.106	.131
	14	29.724	29.801	29.821	29.782	8	12	10	9	15	11	11.7	23	8	.051	.041	.057	.049
	15	29.648	29.214	28.844	29.235	15	18	26	17	21	28	22.0	28	9	.063	.065	.117	.082
	16	29.036	29.302	29.484	29.274	20	20	18	21	21	19	20.3	26	18	.096	.096	.087	.093
	17	29.350	29.157	29.149	29.219	17	29	31	18	31	32	27.0	34	15	.083	.137	.162	.141
	18	29.224	29.164	29.181	29.190	27	31	25	29	34	27	30.0	34	25	.124	.139	.112	.135
	19	29.116	29.146	28.972	29.078	30	34	52	33	38	55	42.0	55	25	.132	.144	.349	.208
	20	29.317	29.619	29.717	29.551	11	8	3	12	9	4	08.3	57	0	.061	.051	.038	.050
	21	29.710	29.661	29.569	29.647	3	10	9	4	12	10	08.7	12	1	.038	.046	.054	.045
	22	29.552	29.599	29.628	29.593	13	19	17	14	21	18	17.7	24	8	.067	.080	.083	.077
	23	29.676	29.511	29.645	29.611	16	20	16	17	21	17	18.3	23	16	.078	.096	.072	.081
	24	29.653	29.488	29.310	29.484	13	22	22	14	25	23	20.7	26	12	.067	.084	.107	.086
	25	29.212	29.249	29.340	29.267	23	23	16	24	26	18	22.7	29	18	.112	.089	.167	.121
	26	29.340	29.339	29.398	29.359	16	24	20	18	28	22	22.7	31	16	.067	.083	.085	.078
	27	29.510	29.507	29.496	29.504	21	23	21	23	26	23	24.3	32	22	.090	.089	.090	.090
	28	29.333	29.240	29.262	29.278		26	26	22	29	28	26.3				.106	.117	.112
	29	29.299	29.328	29.276	29.301	27	31	32	29	35	34	32.7	42	24	.124	.139	.155	.139
	30	29.144	29.168	29.345	29.219	33	34	27	33	38	29	33.3	40	29	.188	.144	.134	.157
	31	29.323	29.121	29.063	29.169	19	30	30	21	26	32	29.7	38	22	.080	.098	.144	.107
Means....		29.529	29.495	29.528	29.517				19.5	25.3	22.1	22.3			.089	.097	.107	.097
Feb'y	1	20.095	29.084	29.173	29.117	22	23	18	24	26	22	24.0	30	30	.095	.089	.033	.079
	2	29.163	29.074	29.210	29.149	17	19	11	19.5	23	14	18.8	24	12	.066	.058	.037	.064
	3	29.267	29.135		29.201	11.5	11		13.5	13		13.2			.043	.049		.046
	*4																	
	*5																	
	*6																	
	*7																	
	*8																	
	9			29.100	29.100			31			34	34.0	35	31			.139	.137
	10	29.123	29.200	29.222	29.182	30	37	32	32	40	34	35.3	40	30	.144	.181	.155	.160
	11	29.303	29.411	28.554	29.423	24	28	26	25	30	31	28.7	36	23	.117	.130	.083	.110
	12	29.587	29.524	29.566	29.559	23	28	23	24	30	24	26.0	31	21	.112	.130	.112	.115
	13	29.574	29.549	29.489	29.537	23	28	27	24	29	28	27.0	30	21	.112	.142	.136	.130
	14	29.135	29.056	29.265	29.152	28	27	1	29	29	2	20.0	31	2	.142	.124	.134	.133
	15	29.493	29.502	29.817	29.604	-4	2	-9	-5	3	-8	-03.3	8	-8	.025	.036	.018	.036
	16	29.958	29.729	29.752	29.813	-14	-1	7	-14	0	9	-01.7	10	-14	.022	.019	.037	.033
	17	29.732	29.656	29.577	29.655	13	29	26	15	31	27	24.3		8	.056	.137	.129	.107
	18	29.555	29.335	29.180	29.357	26	31	31	27	32	33	30.7	33	22	.129	.162	.151	.147
	19	29.075	29.033	29.213	29.107	27	31	24	29	34	25	29.3	35	25	.124	.139	.117	.127
	20	29.307	29.454	29.643	29.468	21	25	20	22	27	24	24.3	30	19	.101	.112	.082	.092
	21	29.706	29.603	29.498	29.602	19	35	42	20	39	43	34.0	44	17	.092	.152	.254	.166
	22	29.552	29.529	29.524	29.535	40	48	40	41	49	42	44.0	49	39	.235	.322	.221	.259
	23	29.477	29.251	29.094	29.274	32	45	46	33	48	48	43.0	50	32	.168	.260	.224	.257
	24	29.194	29.268	29.376	29.279	27	28	26	30	33	29	30.7	50	27	.113	.096	.106	.106
	25	29.749	29.833	29.956	29.846	8	13	9	9	16	11	12.0	25	7	.051	.044	.043	.046
	26	30.073	29.970	29.768	29.937	8	7	25	9	21	26	18.7	39	7	.051		.123	.087
	27	29.683	29.745	29.751	29.726	18	32	31	19	34	32	28.3	36	19	.087	.155	.162	.135
	28	29.683	29.570	29.514	29.589	29	38	36	30	41	38	36.3	44	27	.149	.190	.186	.175
Means....		29.476	29.432	29.465	29.444				20.7	28.5	25.8	25.1			.101	.131	.124	.129

\* Observatory removed from corner of Larned and Hasting streets to Marine hospital grounds, and repairs made to same.

the northern and northwestern lakes, at Detroit, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0=clear sky.) (10=sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity in miles per hour.			Resultant velocity, in miles, per hour.	Resultant direction.	7 a. m.	2 p. m.	9 p. m.		
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.754	.606	.840	.733	NE...	NE...	NE...	2.6	1.4	2.1	2.0	N. 45 W.	2	10	0		
.810	.746	.721	.759	SW...	SW...	SW...	1.3	2.1	1.7	1.7	S. 45 W.	0	0	7		
.721	.685	.500	.635	SW...	SW...	SW...	1.0	2.6	7.5	3.7	S. 45 W.	0	10	10		
.834	.509	.769	.704	NW...	NW...	NW...	4.6	5.8	2.9	4.3	N. 45 W.	10	4	0		
.791	.659	.816	.755	W...	W...	W...	3.1	2.6	3.8	3.2	West...	10	10	10		
.659	.730	.692	.694	W...	W...	W...	1.2	1.2	4.3	2.2	West...	10	10	10		
.804	.791	.730	.775	NW...	NW...	NW...	6.4	4.3	7.8	6.3	N. 45 W.	10	10	0		
.804		.730	.767	NE...	NE...	NE...	5.3	3.2	0.7	3.0	N. 45 E.	6	0	0		
.730	.598	.648	.659	SW...	SW...	Calm...	2.6	1.7	0	1.6	S. 45 W.	0	4	0		
.702	.644	.761	.702	S...	SW...	S...	1.6	2.7	1.6	2.0	S. 18 W.	10	10	10		
.775	.712	.893	.793	S...	S...	SW...	0.7	0.3	1.0	0.7	S. 19 W.	10	10	10		.34
.895	.811	.916	.874	S...	SE...	S...	0.6	1.7	2.6	1.7	S. 14 E.	10	10	10		
.895	.606	.754	.752	SW...	SW...	NW...	5.8	4.7	5.4	4.0	S. 75 W.	10	10	10		
.784	.475	.797	.685	NW...	NE...	NE...	0.6	1.7	6.8	2.7	N. 40 E.	0	10	0		
.671	.570	.768	.670	NE...	NE...	NE...	6.7	7.8	4.6	6.3	N. 45 E.	10	10	10		.41
.855	.855	.845	.856	NW...	NW...	NW...	9.6	8.7	1.8	6.7	N. 45 W.	10	10	0		
.840	.788	.896	.841	SW...	SW...	SW...	1.2	2.6	0.7	1.6	S. 45 W.	8	9	10		
.775	.712	.761	.749	Calm...	SW...	NE...	0	0.7	2.1	0.6	N. 45 E.	10	6	0		.02
.703	.628	.805	.712	Calm...	S...	S...	0	0.8	8.8	3.2	South...	8	9	0		
.804	.784	.740	.776	W...	W...	W...	10.6	14.7	12.9	12.7	West...	10	0	0		
.740	.610	.791	.714	W...	W...	W...	9.4	8.3	7.6	8.4	West...	0	7	6		
.816	.712	.840	.789	SW...	SW...	SW...	2.4	2.6	2.8	2.7	S. 45 W.	5	0	0		
.834	.855	.834	.841	SW...	SW...	SW...	1.6	2.3	1.6	1.7	S. 45 W.	10	10	0		
.816	.622	.864	.767	NW...	NW...	NW...	3.7	4.1	4.8	4.0	N. 45 W.	4	10	10		
.868	.634	.682	.728	NW...	NW...	Calm...	2.4	1.6	0	1.3	N. 45 W.	10	8	0		.04
.682	.543	.721	.649	SW...	SW...	SW...	1.6	2.1	1.7	1.7	S. 45 W.	10	0	0		
.730	.634	.730	.698	SW...	SW...	SW...	0.8	0.6	0.8	0.7	S. 45 W.	10	9	10		
	.665	.768	.717	Calm...	Calm...	SE...	0	0	0.7	2.0	S. 45 E.	10	10	2		
.775	.712	.792	.760	SW...	Calm...	E...	1.8	0	2.0	0.7	S. 23 E.	10	9	10		
1.000	.628	.775	.831	E...	SW...	NW...	3.1	4.1	3.1	0.7	S. 67 W.	10	10	0		
.712	.462	.794	.656	NW...	W...	W...	0.8	12.0	6.7	6.7	N. 75 W.	0	8	4		
.786	.666	.773	.742							1.7	N. 82 W.	7.2	7.5	4.5		.81
.738	.634	.449	.607	NW...	NW...	NW...	0.8	3.1	6.2	3.0	N. 45 W.	10	4	0		
.623	.467	.457	.516	W...	W...	W.NW	1.8	3.8	3.8	3.3	N. 82 W.	10	10	10		
.538	.623		.580	N...	W...		5.5	5.1		2.9	West...	10	10			
		.712	.712			SE...			5.5	1.7	S. 45 E.			10		
.794	.732	.792	.773	S. SW.	N. NE.	N...	0.3	2.5	6.5	2.7	N. 6 E.	10	10	10		
.872	.782	.480	.711	N...	N...	N. NW.	8.0	23.0	7.0	12.7	N. 4 W.	10	10	10		.58
.868	.782	.868	.839	NE...	NW...	NE...	4.0	7.5	10.3	5.3	N. 17 E.	10	5	10		.50
.868	.887	.883	.879	N...	S...	S...	1.5	3.0	6.0	2.5	South...	10	10	10		
.887	.775	.718	.793	E...	SW...	SW...	0.3	8.0	11.0	6.3	S. 43 W.	10	10	10		.20
.658	.730	.594	.661	SW...	W. SW	W...	6.0	6.5	6.0	6.0	S. 70 W.	10	10	0		
1.000	.416	.568	.661	S...	S...	SE...	5.0	14.0	17.0	11.3	S. 21 E.	0	0	10		
.648	.788	.880	.772	SE...	S...	S. SE.	9.0	13.5	10.0	10.3	S. 19 E.	8	8	0		
.880	.896	.800	.859	S. SE.	SE...	SE...	11.0	5.0	2.5	6.0	S. 32 E.	10	10	10		
.775	.712	.872	.726	S...	W. SW	S...	5.0	6.0	2.5	3.7	S. 30 W.	10	10	0		.15
.860	.761	.483	.701	S...	W...	W...	6.0	11.5	6.2	6.3	S. 70 W.	8	7	10		
.850	.636	.916	.801	E...	SE...	E. SE.	3.0	11.5	22.0	12.0	S. 62 E.	10	5	0		
.912	.926	.829	.889	SE...	S...	S...	9.0	10.0	1.0	6.3	S. 21 E.	4	7	10		
.893	.777	.850	.840	E...	S. SE.	S. SE.	7.5	11.2	2.0	9.0	S. 38 E.	10	10	10		
.675	.510	.665	.617	W...	W. SW	W...	9.0	10.0	8.0	9.0	S. 82 W.	8	0	9		.12
.784	.492	.596	.624	N. NW.	W. NW	W...	9.0	7.5	6.0	6.7	N. 56 W.	8	5	9		
.784		.876	.830	S. SE.	SW...	SW...	7.0	8.0	6.2	6.0	S. 24 W.	0	3	9		
.845	.792	.896	.844	SW...	NE...	NE...	1.0	3.5	2.0	1.6	N. 45 E.	2	0	0		
.890	.738	.811	.813	E...	E...	E. SE.	8.0	2.5	3.0	4.3	S. 85 E.	7	5	10		
.809	.707	.727	.744							1.7	S. 6 W.	7.9	6.8	7.1		1.55

*Reductions of the monthly meteorological register of the army*

Date.		TEMPERATURE—FAHRENHEIT.													VAPOR.			
		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Elasticity, in inches and decimals.					
						7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				Maximum.	Minimum.	
		7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.
1866.						°	°	°	°	°	°	°						
March	1	29.507	29.413	29.426	29.479	42	47	38	43	54	40	45.7	56	36	251	231	233	231
	2	29.476	29.406	29.225	29.369	37	47	48	39	53	49	47.0	56	57	194	244	241	214
	3	29.537	29.580	29.537	29.535	31	41	27	34	43	31	36.0	52	30	139	231	261	210
	4	29.565	29.612	29.676	29.620	19	24	19	23	26	23	24.0	38	21	058	106	054	071
	5	29.762	29.714	29.704	29.977	17	31	23	18	32	28	26.0	33	17	083	162	086	110
	6	29.789	29.724	29.637	29.717	19	31	30	20	36	33	29.7	37	17	092	116	122	110
	7	29.663	29.662	29.729	29.685	20	21	16	21	26	21	22.7	37	21	096	056	033	060
	8	29.755	29.727	29.649	29.710	15	33	25	17	34	26	25.7	36	15	063	175	125	114
	9	29.509	29.546	29.730	29.595	22	24	21	24	27	21	24.0	30	20	095	095	113	101
	10	29.608	29.710	29.418	29.645	12	26	26	13	29	29	23.7	31	12	063	106	106	091
	11	29.110	29.128	29.247	29.162	34	41	34	36	42	37	38.3	43	28	170	244	157	189
	12	29.415	29.511	29.578	29.501	31	35	31	32	37	32	33.3	38	30	162	172	162	164
	13	29.681	29.712	29.509	29.664	29	33	33	31	36	34	33.3	36	29	137	149	175	154
	14	29.497	29.520	29.561	29.526	33	35	34	34	36	35	35.0	38	32	175	19	183	200
	15	29.540	29.353	29.283	29.392	32	33	34	33	35	34	34.0	36	32	168	162	196	174
	16	29.217	29.161	29.244	29.207	29	28	18	31	29	20	26.7	36	19	137	142	076	124
	17	29.438	29.531	29.609	29.526	10	16	11	11	17	13	13.3	23	9	057	078	049	062
	18	29.306	29.253	29.367	29.339	17	28	25	18	31	29	26.0	33	11	083	119	069	104
	19	29.427	29.425	27.471	29.441	19	22	18	21	24	20	21.7	32	19	080	025	078	061
	20	29.355	29.143	28.872	29.123	24	27	28	25	28	29	27.3	29	19	117	136	042	131
	21	29.134	29.344	29.491	29.323	21	25	23	23	27	25	25.0	34	22	090	112	100	100
	22	29.671	29.622	29.443	29.579	21	31	30	23	35	31	29.7	35	30	090	126	155	134
	23	29.198	29.270	29.357	29.275	34	35	29	36	38	31	35.0	43	30	170	165	137	157
	24	29.447	27.229	29.215	29.297	27	29	24	28	31	27	28.7	34	26	124	137	095	132
	25	29.441	29.409	29.561	29.470	11	16	15	13	19	16	16.0	30	12	049	056	074	060
	26	29.717	29.751	29.739	29.736	14	25	25	15	27	26	22.7	30	13	071	112	120	102
	27	29.872	29.833	29.779	29.828	21	30	27	24	32	29	28.3	32	20	079	144	124	116
	28	29.454	29.199	29.221	29.291	26	32	32	27	34	34	31.7	36	26	129	155	155	146
	29	29.384	29.402	29.485	29.424	25	30	29	27	32	30	29.7	37	25	112	144	149	135
	30	29.496	29.363	29.219	29.359	22	29	29	24	34	30	29.3	36	19	095	103	149	116
	31	28.879	28.872	29.185	28.962	35	41	38	38	47	40	41.7	50	29	165	179	203	182
Means....		29.488	29.455	29.460	29.468	.....	.....	.....	25.8	33.2	29.4	29.4	.....	.....	116	143	127	129
April	1	29.448	29.546	29.567	29.520	32	38	35	35	43	38	38.7	44	34	142	190	165	166
	2	29.525	29.488	29.483	29.499	33	36	33	35	36	34	35.0	40	32	162	212	175	183
	3	29.484	29.409	29.395	29.429	34	47	45	36	51	47	44.7	53	32	170	270	273	238
	4	29.406	29.323	29.255	29.328	37	58	49	39	69	55	54.3	73	35	194	336	369	266
	5	29.277	29.455	29.562	29.435	52	47	38	59	54	43	52.0	63	41	296	231	164	230
	6	29.624	29.643	29.716	39.664	30	33	29	33	38	33	34.7	45	31	132	123	114	123
	7	29.724	29.634	29.619	29.659	25	30	29	30	35	32	32.3	35	28	078	109	126	104
	8	29.651	29.622	29.656	29.643	28	31	27	30	37	30	32.3	39	27	130	105	113	116
	9	29.752	29.680	29.637	29.690	30	35	33	30	44	37	37.0	45	24	167	087	136	130
	10	29.536	29.407	29.375	29.439	31	42	41	36	52	46	44.7	52	32	116	136	192	148
	11	29.446	29.379	29.393	29.406	37	47	44	39	55	51	48.3	61	35	194	217	196	202
	12	29.392	29.148	29.287	29.276	45	55	47	55	57	50	57.3	71	45	168	274	283	262
	13	29.623	29.670	29.586	29.626	38	39	39	41	45	42	42.7	52	37	190	160	199	189
	14	29.356	29.370	29.382	29.369	41	53	40	45	60	48	57.0	62	39	205	319	143	219
	15	29.584	29.586	29.543	29.571	35	39	37	39	44	41	41.3	49	36	152	173	168	164
	16	29.548	29.503	29.479	29.519	37	47	47	41	55	53	49.7	57	31	168	217	244	210
	17	29.577	29.542	29.517	29.545	49	57	53	52	65	59	58.7	69	44	308	359	323	330
	18	29.593	29.521	29.439	29.518	52	60	58	55	70	60	61.7	72	53	349	385	456	397
	19	29.545	29.479	29.464	29.496	55	56	56	57	59	60	58.7	67	51	407	409	396	404
	20	29.283	29.197	29.155	29.212	59	62	58	68	68	60	65.3	72	56	380	476	456	437
	21	29.061	29.043	29.049	29.051	56	50	46	60	68	55	61.0	68	54	396	123	192	237
	22	29.121	29.126	29.109	29.119	46	50	44	50	61	57	54.0	63	45	258	216	196	223
	23	28.928	28.852	28.954	28.921	38	36	35	42	43	43	42.7	53	39	177	121	152	150
	24	29.027	29.017	29.073	29.039	33	40	34	40	53	43	45.3	55	35	097	078	079	085
	25	29.041	29.103	29.260	29.135	29	38	34	37	51	39	42.3	54	36	068	059	131	086
	26	29.419	29.375	29.382	29.392	30	42	36	37	55	42	44.7	52	30	086	097	134	106
	27	29.436	29.330	29.198	29.321	36	47	45	41	59	52	50.7	62	29	147	165	207	173
	28	29.100	29.172	29.445	29.239	53	60	44	62	74	53	62.7	78	29	284	331	185	286
	29	29.529	29.430	29.480	29.480	42	46	35	48	63	41	50						

northern and northwestern lakes, at Cleveland, Ohio.

VAPOR.				WIND.								Amount of cloudiness.			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.	(0 = clear sky.) (10 = sky entirely overcast.)				
7 a. m.	9 p. m.	Mean.		7 a. m.	9 p. m.		7 a. m.	9 p. m.				7 a. m.	9 p. m.			
91	.623	.783	.766	S.....	S.....	W.....	4	12	4	5.7	S. 14 W.	5	4	5	.173	
84	.751	.783	.806	W.....	W.....	SW.....	12	12	2	11.0	S. 76 W.	10	3	0	.118	.45
72	.599	.768	.713	S.....	S.SW	S.....	4	12	4	6.7	S. 13 W.	3	3	4	.180	
99	.734	.774	.769	S.....	W.....	Calm	4	2	0	1.5	S. 27 W.	9	5	6	.138	
46	.768	.793	.802	NW.....	NE.....	NE.....	2	12	2	4.7	N. 37 E.	8	6	4	.164	.33
48	.560	.718	.709	SE.....	W.....	S.....	4	12	2	3.7	S. 64 W.	0	3	3	.239	
44	.691	.815	.750	W.SW.	W.byN	S.....	4	12	2	5.0	S. 86 W.	0	2	6	.201	
98	.731	.804	.811	NE.....	NE.....	NE.....	2	4	12	6.0	N. 45 E.	10	7	10	.138	.13
93	.764	.747	.768	N.NE.	N.NE.	NE.....	4	4	2	3.3	N. 27 E.	1	5	10	.155	
31	.802	.786	.773	E.SE.	E.....	E.....	4	2	2	2.7	S. 79 E.	10	10	10	.128	.02
31	.712	.796	.746	NE.....	N.NE.	Calm	12	12	0	8.0	N. 35 E.	4	3	2	.167	.42
22	.580	.810	.737	E.SE.	W.....	N.....	2	2	25	8.0	N. 1 W.	0	0	10	.204	
56	.731	.822	.770	N.....	N.NW.	SE.....	12	2	2	4.0	N. 3 E.	6	5	3	.113	
56	.708	.793	.752	SW.....	NE.....	S.....	4	2	2	1.3	S. 21 W.	4	3	2	.180	
08	.735	.888	.777	S.....	SW.....	NE.....	2	2	2	0.7	South	10	10	10	.036	
19	.780	.828	.809	NE.....	NE.....	NE.....	2	4	25	10.3	N. 45 E.	10	10	5	.046	.32
80	.712	.786	.759	NE.....	W.NW.	S.....	12	2	2	3.0	N. 49 E.	0	0	0	.187	
65	.569	.751	.695	SW.....	W.....	S.....	4	2	2	2.3	S. 45 W.	0	3	0	.132	
65	.751	.843	.786	SE.....	SW.....	W.....	4	2	12	3.8	S. 68 W.	10	10	10	.073	.85
36	.768	.854	.819	SW.....	SW.....	Calm	2	2	0	1.3	S. 45 W.	0	8	0	.086	.25
96	.951	.804	.850	S.....	N.....	S.....	2	2	2	0.7	South	10	7	10	.077	
41	.793	.843	.826	N.....	NE.....	Calm	4	2	0	1.9	N. 15 E.	10	7	10	.091	.21
90	.804	.799	.798	N.NE.	N.....	S.....	2	2	2	0.7	N. 25 E.	7	0	0	.174	
36	.771	.900	.836	SE.....	SE.....	SE.....	2	4	2	2.7	S. 45 E.	10	7	3	.099	.01
58	.776	.850	.828	S.....	SW.....	W.NW.	12	25	35	17.7	S. 72 W.	10	6	2	.124	
41	.734	.851	.810	W.....	W.byN	S.....	12	2	2	4.7	S. 87 W.	0	3	4	.122	.04
43	.741	.817	.800	S.SE.	W.....	S.....	4	12	2	4.0	S. 65 W.	10	5	1	.095	.17
56	.784	.850	.830	W.....	N.NE.	NE.....	2	2	2	1.0	N. 4 E.	7	8	10	.177	
95	.768	.793	.819	N.....	NW.....	SE.....	12	2	2	4.0	North	5	0	6	.160	.45
22	.743	.833	.799	E.NE.	NW.....	SE.....	2	2	2	0.7	N. 75 E.	0	0	0	.158	
38	.764	.848	.783	E.....	NE.....	SE.....	2	2	2	1.6	East	0	0	0	.146	
08	.732	.811	.784							0.9	N. 64 W.	5.4	4.6	4.7	4.281	3.63
43	.657	.819	.773	S.....	NW.....	Calm	4	2	0	1.0	S. 28 W.	6	3	6	.149	
56	.828	.738	.807	S.....	N.....	S.....	4	2	2	0.7	South	7	6	3	.125	.01
58	.750	.862	.823	S.....	S.....	S.....	2	4	4	3.3	South	5	6	5	.138	
17	.744	.812	.791	S.....	NW.....	N.....	2	2	2	0.7	N. 45 W.	3	10	7	.111	.21
00	.734	.812	.815	NW.....	N.....	SE.....	12	2	2	3.9	N. 38 W.	10	3	3	.131	
58	.782	.854	.831	S.....	W.SW.	W.....	12	25	35	20.7	S. 70 W.	10	7	5	.120	
90	.720	.793	.768	W.NW.	W.....	SE.....	25	4	2	8.3	N. 74 W.	4	0	0	.154	.02
28	.804	.799	.810	S.....	.....	SE.....	4	.....	2	2.5	S. 23 E.	0	.....	0	.064	
98	.782	.860	.847	S.SE.	N.....	S.....	2	2	2	0.7	S. 25 E.	6	7	10	.284	
02	.776	.812	.830	SW.....	W.....	W.....	12	12	2	8.0	S. 69 W.	8	0	7	.....	.36
41	.783	.831	.818	N.....	N.....	N.....	12	4	4	6.7	North	10	10	0	.047	.16
80	.695	.831	.802	E.....	N.NE.	S.....	2	4	2	1.3	N. 65 E.	10	5	0	.105	
12	.618	.790	.740	S.....	N.....	SE.....	2	2	2	0.7	S. 45 E.	3	5	6	.136	
36	.731	.848	.805	SE.....	N.....	SE.....	2	2	2	1.0	S. 74 E.	7	0	0	.093	
31	.661	.802	.765	SE.....	N.NW.	SE.....	2	4	2	0.5	N. 55 E.	5	0	0	.069	
46	.846	.841	.844	NE.....	N.....	N.....	4	4	12	6.3	N. 8 E.	10	10	10	.207	
28	.668	.833	.776	NE.....	NE.....	Calm	4	12	0	5.3	N. 45 E.	0	0	0	.154	
93	.768	.846	.836	Calm	N.....	S.....	0	2	2	.....	.....	0	0	0	.042	
12	.731	.848	.797	W.....	NW.....	S.....	2	2	2	1.0	S. 81 W.	5	4	0	.234	
33	.779	.810	.807	SW.....	W.....	Calm	4	4	0	2.5	S. 77 W.	6	9	0	.104	
46	.819	.843	.809	SW.....	N.....	NE.....	12	4	12	1.3	North	8	3	10	.098	
80	.826	.831	.849	NE.....	NE.....	N.....	4	25	25	16.7	N. 24 E.	10	7	4	.102	.33
22	.740	.882	.815	N.....	N.....	N.....	4	12	12	9.3	North	6	9	6	.119	.29
64	.642	.819	.775	S.....	NW.....	S.....	2	2	2	1.0	S. 28 W.	3	2	0	.115	
56	.804	.783	.814	SE.....	NW.....	S.....	2	2	2	0.7	South	0	0	0	.120	
74	.689	.850	.804	SE.....	NW.....	S.....	2	2	2	0.7	South	0	0	0	.129	
86	.758	.793	.779	N.....	N.....	NE.....	2	2	4	2.5	N. 23 E.	4	3	0	.141	
56	.751	.841	.783												.037	
31	.852	.852	.845												.018	
00	.782	.817	.833	S.....	N.NE.	SE.....	4	4	2	1.1	S. 59 E.	0	2	0	.124	.09
54	.714	.779	.782	S.SE.	NW.....	S.....	4	4	2	1.1	S. 24 W.	0	6	4	.....	
49	.749	.823	.807							1.3	N. 42 W.	5.2	4.2	2.9	3.280	1.47



Reductions of the monthly meteorological register of the army

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in inches and decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1865.					°	°	°	°	°	°	°	°	°					
July	1	29.278	29.177	29.173	29.208	64	71	61	66	80	65	70.3	82	65	569	637	453	552
	2	29.286	29.328	29.311	29.308	60	65	61	62	70	65	65.7	72	61	491	550	463	514
	3	29.386	29.340	29.320	29.349	58	66	70	62	75	75	70.7	79	58	429	519	462	486
	4	29.405	29.350	29.310	29.355	66	72	72	70	72	77	75.0	83	68	586	704	715	668
	5	29.413	29.455	29.445	29.438	66	70	64	69	75	68	70.7	78	68	539	608	543	584
	6	29.428	29.321	29.324	29.358	67	77	78	70	89	85	81.3	90	65	622	765	761	749
	7	29.314	29.314	29.347	29.325	75	80	72	81	88	76	81.7	88	71	787	915	731	822
	8	29.400	29.300	29.313	29.338	68	71	68	70	77	72	72.0	79	68	638	678	631	658
	9	29.400	29.408	29.385	29.398	64	69	64	68	74	69	70.3	74	67	543	641	529	571
	10	29.326	29.267	29.181	29.258	60	67	62	64	71	66	67.0	72	62	451	628	529	541
	11	29.223	29.225	29.205	29.218	60	66	65	64	72	69	68.3	73	62	451	559	524	511
	12	29.228	29.253	29.198	29.226	57	59	70	60	79	74	71.0	79	58	426	574	671	558
	13	29.386	29.456	29.426	29.423	54	60	57	58	65	60	61.0	75	56	365	451	426	414
	14	29.456	29.411	29.388	29.418	54	65	60	58	71	64	64.3	72	55	365	537	543	481
	15	29.341	29.336	29.276	29.318	55	61	60	60	66	62	62.7	68	58	367	470	525	455
	16	29.189	29.186	29.168	29.181	56	60	59	59	64	62	61.7	64	57	409	465	461	445
	17	29.188	29.321	29.293	29.267	60	66	62	64	72	66	68.7	72	61	465	559	522	515
	18	29.304	29.278	29.218	29.267	56	67	65	60	77	70	69.0	77	58	386	527	551	488
	19	29.036	28.928	29.048	29.005	56	65	65	60	70	68	66.0	73	60	326	550	577	484
	20	29.216	29.285	29.293	29.265	62	70	70	65	75	73	71.0	75	62	516	606	621	615
	21	29.365	29.320	29.228	29.304	65	73	68	69	74	72	71.7	77	67	564	722	621	665
	22	29.418	29.480	29.458	29.452	64	64	65	67	68	68	67.7	72	66	556	543	577	558
	23	29.193	29.468	29.405	29.355	63	68	66	67	72	70	69.7	72	64	522	631	526	584
	24	29.387	29.371	29.317	29.358	62	71	70	65	76	72	71.0	77	65	516	691	706	622
	25	29.113	29.100	29.216	29.143	72	73	68	75	78	71	74.7	79	70	744	744	644	711
	26	29.291	29.325	29.300	29.305	64	72	70	67	78	73	72.7	80	64	556	704	623	651
	27	29.241	29.210	29.190	29.214	65	74	73	68	80	77	75.0	80	67	577	758	757	695
	28	29.258	29.219	29.215	29.231	71	76	68	74	81	71	75.3	80	71	718	829	644	731
	29	29.325	29.400	29.395	29.373	66	70	64	68	75	68	70.3	75	68	612	666	543	605
	30	29.538	29.578	29.548	29.555	57	63	61	60	68	64	64.0	70	58	426	509	497	477
	31	29.607	29.578	29.535	29.573	50	69	67	54	74	70	66.0	74	50	308	641	622	524
Means....		29.320	29.322	29.304	29.315	.....	.....	.....	65.3	74.6	69.7	69.5	.....	.....	515	631	591	572
August	1	29.581	29.520	29.512	29.538	65	71	74	68	79	78	75.0	82	66	577	651	725	671
	2	29.558	29.552	29.534	29.548	71	78	73	74	82	79	75.0	83	71	718	904	730	724
	3	29.552	29.499	29.466	29.506	72	77	74	75	83	77	78.3	84	72	744	846	792	796
	4	29.492	29.458	29.372	29.441	73	75	71	77	81	75	77.7	82	72	757	787	704	749
	5	29.510	29.500	29.435	29.482	70	72	71	72	78	75	75.0	79	70	706	704	704	705
	6	29.212	29.102	29.070	29.128	72	75	70	75	80	73	76.0	82	70	744	800	683	746
	7	29.228	29.277	29.263	29.256	63	68	64	67	74	68	69.7	75	64	522	604	543	556
	8	29.396	29.498	29.378	29.424	59	68	66	62	72	70	68.0	74	60	460	631	566	559
	9	29.418	29.350	29.222	29.330	67	75	73	69	80	76	75.0	80	63	635	800	771	736
	10	29.098	29.132	29.165	29.132	71	73	71	73	78	75	75.3	78	70	731	744	704	736
	11	29.298	29.311	29.298	29.302	64	61	60	67	65	63	65.0	76	61	556	493	472	506
	12	29.366	29.371	29.366	29.368	58	62	60	60	68	63	63.7	68	57	456	476	472	467
	13	29.428	29.391	29.366	29.395	54	63	63	57	71	67	65.0	72	52	378	469	522	456
	14	29.378	29.467	29.315	29.387	62	71	67	65	77	70	70.7	77	62	516	678	622	606
	15	29.341	29.335	29.300	29.325	60	72	67	63	80	71	71.3	80	62	478	677	608	586
	16	29.288	29.348	29.318	29.318	66	66	64	69	69	67	68.3	73	64	599	524	556	565
	17	29.398	29.383	29.376	29.386	59	65	61	62	72	64	66.0	72	58	460	524	457	494
	18	29.404	29.348	29.341	29.364	65	70	66	67	75	69	70.3	75	54	591	666	599	619
	19	29.364	29.365	29.318	29.349	54	71	67	57	77	70	68.0	78	55	378	678	622	599
	20	29.353	29.292	29.230	29.292	61	74	70	64	79	74	72.3	80	62	497	772	679	649
	21	29.173	29.162	29.195	29.177	66	74	65	67	78	68	71.0	78	65	626	795	577	663
	22	29.096	29.196	29.254	29.182	58	62	60	60	65	63	62.7	68	59	456	516	472	483
	23	29.346	29.336	29.424	29.369	57	62	59	60	67	61	62.7	68	59	426	429	473	469
	24	29.537	29.558	29.526	29.540	51	60	56	53	67	59	59.7	52	68	342	425	409	394
	25	29.587	29.556	29.526	29.557	48	68	61	50	72	65	62.3	72	48	309	631	483	474
	26	29.569	29.485	29.445	29.496	55	70	69	57	77	72	68.7	77	55	407	639	644	563
	27	29.441	29.443	29.471	29.432	62	67	64	66	72	68	68.7	73	64	502	525	5	

northern and northwestern lakes, at Cleveland, Ohio.

VAPOR.				WIND.										Amount of cloudiness.			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.	(0 = clear sky.) (10 = sky entirely overcast.)						
7 a. m.	9 p. m.	9 p. m.	Mean.	7 a. m.	9 p. m.	9 p. m.	7 a. m.	9 p. m.	9 p. m.			7 a. m.	9 p. m.	9 p. m.				
791	.623	.783	.766	S.....	S.....	W.....	4	12	4	5.7	S. 14 W.	5	4	5	.173			
824	.751	.783	.806	W.....	W.....	SW.....	12	12	2	11.0	S. 76 W.	10	3	0	.118	.45		
772	.599	.768	.713	S.....	S. SW	S.....	4	12	4	6.7	S. 13 W.	3	3	4	.180			
799	.734	.774	.769	S.....	W.....	Calm	4	2	0	1.5	S. 27 W.	9	5	6	.138			
846	.768	.793	.802	NW.....	NE.....	NE.....	2	12	2	4.7	N. 37 E.	8	6	4	.164	.33		
848	.560	.718	.709	SE.....	W.....	S.....	4	12	2	3.7	S. 64 W.	0	3	3	.239			
744	.691	.815	.750	W. SW	W. by N	S.....	4	12	2	5.0	S. 86 W.	0	2	6	.201			
898	.731	.804	.811	NE.....	NE.....	NE.....	2	4	12	6.0	N. 45 E.	10	7	10	.138	.13		
793	.764	.747	.768	N. NE	N. NE	NE.....	4	4	2	3.3	N. 27 E.	1	5	10	.155			
731	.802	.786	.773	E. SE	E.....	E.....	4	2	2	2.7	S. 79 E.	10	10	10	.128	.02		
731	.712	.796	.746	NE.....	N. NE	Calm	12	12	0	8.0	N. 35 E.	4	3	2	.167	.42		
822	.580	.810	.737	E. SE	W.....	N.....	2	2	25	8.0	N. 1 W.	0	0	10	.204			
756	.731	.822	.770	N.....	N. NW	SE.....	12	2	2	4.0	N. 3 E.	6	5	3	.113			
756	.708	.793	.752	SW.....	NE.....	S.....	4	2	2	1.3	S. 21 W.	4	3	2	.180			
708	.735	.888	.777	S.....	SW.....	NE.....	2	2	2	0.7	South	10	10	10	.036			
819	.780	.828	.809	NE.....	NE.....	NE.....	2	4	25	10.3	N. 45 E.	10	10	5	.046	.32		
780	.712	.786	.759	NE.....	W. NW	S.....	12	2	2	3.0	N. 49 E.	0	0	0	.187			
765	.569	.751	.695	SW.....	W.....	S.....	4	2	2	2.3	S. 45 W.	0	3	0	.132			
765	.751	.843	.786	SE.....	SW.....	W.....	4	2	12	3.8	S. 68 W.	10	10	10	.073	.85		
836	.768	.854	.819	SW.....	SW.....	Calm	2	2	0	1.3	S. 45 W.	0	8	0	.086	.25		
796	.951	.804	.850	S.....	N.....	S.....	2	2	2	0.7	South	10	7	10	.077			
841	.793	.843	.826	N.....	NE.....	Calm	4	2	0	1.9	N. 15 E.	10	7	10	.091	.21		
790	.804	.799	.798	N. NE	N.....	S.....	2	2	2	0.7	N. 25 E.	7	0	0	.174			
836	.771	.900	.836	SE.....	SE.....	SE.....	2	4	2	2.7	S. 45 E.	10	7	3	.099	.01		
858	.776	.850	.828	S.....	SW.....	W. NW	12	25	35	17.7	S. 72 W.	10	6	2	.124			
841	.734	.851	.810	W.....	W. by N	S.....	12	2	2	4.7	S. 87 W.	0	3	4	.122	.04		
843	.741	.817	.800	S. SE	W.....	S.....	4	12	2	4.0	S. 65 W.	10	5	1	.095	.17		
856	.784	.850	.830	W.....	N. NE	NE.....	2	2	2	1.0	N. 4 E.	7	8	10	.177			
895	.768	.793	.819	N.....	NW.....	SE.....	12	2	2	4.0	North	5	0	6	.160	.45		
822	.743	.833	.799	E. NE	NW.....	SE.....	2	2	2	0.7	N. 75 E.	0	0	0	.158			
738	.764	.848	.783	E.....	NE.....	SE.....	2	2	2	1.6	East	0	0	0	.146			
808	.732	.811	.784							0.9	N. 64 W.	5.4	4.6	4.7	4.281	3.63		
843	.657	.819	.773	S.....	NW.....	Calm	4	2	0	1.0	S. 28 W.	6	3	6	.149			
856	.824	.738	.807	S.....	N.....	S.....	4	2	2	0.7	South	7	6	3	.125	.01		
858	.750	.862	.823	S.....	S.....	S.....	2	4	4	3.3	South	5	6	5	.138			
817	.744	.812	.791	S.....	NW.....	N.....	2	2	2	0.7	N. 45 W.	3	10	7	.111	.21		
900	.734	.812	.815	NW.....	N.....	SE.....	12	2	2	3.9	N. 38 W.	10	3	3	.131			
858	.782	.854	.831	S.....	W. SW	W.....	12	25	35	20.7	S. 70 W.	10	7	5	.120			
790	.720	.793	.768	W. NW	W.....	SE.....	25	4	2	8.3	N. 74 W.	4	0	0	.154	.02		
828	.804	.719	.810	S.....	N.....	SE.....	4		2	2.5	S. 23 E.	0		0	.064			
898	.782	.860	.847	S. SE	N.....	S.....	2	2	2	0.7	S. 25 E.	6	7	10	.284			
902	.776	.812	.830	SW.....	W.....	W.....	12	12	2	8.0	S. 69 W.	8	0	7		.36		
841	.783	.831	.818	N.....	N.....	N.....	12	4	4	6.7	North	10	10	0	.047	.16		
880	.695	.831	.802	E.....	N. NE	S.....	2	4	2	1.3	N. 65 E.	10	5	0	.105			
812	.618	.790	.740	S.....	N.....	SE.....	2	2	2	0.7	S. 45 E.	3	5	6	.136			
836	.731	.818	.805	SE.....	N.....	SE.....	2	2	2	1.0	S. 74 E.	7	0	0	.093			
831	.661	.802	.765	SE.....	N. NW	SE.....	2	4	2	0.5	N. 55 E.	5	0	0	.069			
846	.846	.841	.844	NE.....	N.....	N.....	4	4	12	6.3	N. 8 E.	10	10	10	.207			
828	.668	.833	.776	NE.....	NE.....	Calm	4	12	0	5.3	N. 45 E.	0	0	0	.154			
893	.768	.846	.836	Calm	N.....	S.....	0	2	2			0	0	0	.042			
812	.731	.848	.797	W.....	NW.....	S.....	2	2	2	1.0	S. 81 W.	5	4	0	.234			
833	.779	.810	.807	SW.....	W.....	Calm	4	4	0	2.5	S. 77 W.	6	9	0	.104			
946	.819	.843	.869	SW.....	N.....	NE.....	12	4	12	1.3	North	8	3	10	.098			
880	.836	.831	.849	NE.....	NE.....	N.....	4	25	25	16.7	N. 24 E.	10	7	4	.102	.33		
822	.740	.882	.815	N.....	N.....	N.....	4	12	12	9.3	North	6	9	6	.119	.29		
861	.642	.819	.775	S.....	NW.....	S.....	2	2	2	1.0	S. 28 W.	3	2	0	.115			
856	.804	.783	.814	SE.....	NW.....	S.....	2	2	2	0.7	South	0	0	0	.120			
874	.689	.850	.804	SE.....	NW.....	S.....	2	2	2	0.7	South	0	0	0	.129			
786	.758	.793	.779	N.....	N.....	NE.....	2	2	4	2.5	N. 23 E.	4	3	0	.141			
756	.751	.841	.783												.037			
831	.852	.852	.845												.018			
900	.782	.817	.833	S.....	N. NE	SE.....	4	4	2	1.1	S. 59 E.	0	2	0	.124	.09		
854	.714	.779	.782	S. SE	NW.....	S.....	4	4	2	1.1	S. 24 W.	0	6	4				
849	.749	.823	.807							1.3	N. 42 W.	5.2	4.2	2.9	3.280	1.47		



Reductions of the monthly meteorological register of the ~~surface~~

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in inches and decimals.			
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1865.					°	°	°	°	°	°	°	°	°					
July	1	29.278	29.177	29.173	29.208	64	71	61	66	80	65	70.3	82	65	569	637	645	617
	2	29.286	29.328	29.311	29.308	60	65	61	62	70	65	65.7	72	61	491	550	545	529
	3	29.386	29.340	29.320	29.349	58	66	70	62	75	75	70.7	79	58	429	519	515	484
	4	29.405	29.350	29.310	29.355	66	72	72	70	78	77	75.0	83	68	586	704	711	660
	5	29.413	29.455	29.445	29.438	66	70	64	69	75	68	70.7	78	68	599	668	711	659
	6	29.428	29.321	29.324	29.358	67	77	78	70	89	85	81.3	90	65	622	765	741	743
	7	29.314	29.314	29.347	29.325	75	80	72	81	88	76	81.7	88	71	787	915	733	777
	8	29.400	29.300	29.313	29.338	68	71	68	70	77	72	72.0	79	68	658	678	671	676
	9	29.400	29.408	29.385	29.398	64	69	64	68	74	69	70.3	74	67	543	641	574	619
	10	29.326	29.267	29.181	29.258	60	67	62	64	71	66	67.0	72	62	451	628	545	574
	11	29.223	29.225	29.205	29.218	60	66	65	64	72	69	68.3	73	62	451	529	544	541
	12	29.228	29.253	29.198	29.226	57	59	70	60	79	74	71.0	79	58	426	574	612	537
	13	29.386	29.456	29.426	29.423	54	60	57	58	65	60	61.0	75	56	365	451	425	414
	14	29.456	29.411	29.388	29.418	54	65	60	58	71	64	64.3	72	55	365	537	543	480
	15	29.341	29.336	29.276	29.318	55	61	60	60	66	62	62.7	68	58	367	470	513	448
	16	29.189	29.186	29.168	29.181	56	60	59	59	64	62	61.7	64	57	409	465	461	445
	17	29.188	29.321	29.293	29.267	60	66	62	64	72	66	68.7	72	61	465	559	512	524
	18	29.304	29.278	29.218	29.267	56	67	65	60	77	70	69.0	77	58	396	527	551	488
	19	29.036	28.928	29.048	29.005	56	65	65	60	70	68	66.0	73	60	396	550	517	474
	20	29.216	29.285	29.293	29.265	62	70	70	65	75	73	71.0	75	62	516	646	673	611
	21	29.365	29.320	29.228	29.304	65	73	68	69	74	72	71.7	77	67	564	718	631	671
	22	29.418	29.480	29.458	29.452	64	64	65	67	68	68	67.7	72	66	556	543	577	558
	23	29.193	29.468	29.405	29.355	63	68	66	67	72	70	69.7	72	64	522	631	566	588
	24	29.387	29.371	29.317	29.358	62	71	70	65	76	72	71.0	77	65	516	691	706	622
	25	29.113	29.100	29.216	29.143	72	73	68	75	78	71	74.7	79	70	744	744	644	711
	26	29.291	29.325	29.300	29.305	64	72	70	67	78	73	72.7	80	64	556	704	693	681
	27	29.241	29.210	29.190	29.214	65	74	73	68	80	77	75.0	80	67	577	758	757	695
	28	29.258	29.219	29.215	29.231	71	76	68	74	81	71	75.3	80	71	718	829	644	736
	29	29.325	29.400	29.395	29.373	66	70	64	68	75	68	70.3	75	68	612	666	543	625
	30	29.538	29.578	29.548	29.555	57	63	61	60	68	64	64.0	70	58	426	509	497	477
	31	29.607	29.578	29.535	29.573	50	69	67	54	74	70	66.0	74	50	308	641	622	524
Means....		29.320	29.322	29.304	29.315	.....	.....	.....	65.3	74.6	69.7	69.5	.....	.....	515	631	591	577
August	1	29.581	29.520	29.512	29.538	65	71	74	68	79	78	75.0	82	66	577	651	785	671
	2	29.558	29.552	29.534	29.518	71	78	73	74	82	79	75.0	83	71	718	904	736	774
	3	29.552	29.499	29.466	29.506	72	77	74	75	83	77	78.3	84	72	744	846	739	776
	4	29.492	29.458	29.372	29.441	73	75	71	77	81	75	77.7	82	72	757	787	704	749
	5	29.510	29.500	29.435	29.482	70	72	71	72	78	75	75.0	79	70	706	704	704	705
	6	29.212	29.102	29.070	29.128	72	75	70	75	80	73	76.0	82	70	744	800	693	746
	7	29.228	29.277	29.263	29.256	63	68	64	67	74	68	69.7	75	64	522	604	543	556
	8	29.396	29.498	29.378	29.424	59	68	66	62	72	70	68.0	74	60	460	631	586	528
	9	29.418	29.350	29.222	29.330	67	75	73	69	80	76	75.0	80	63	635	800	771	736
	10	29.098	29.132	29.165	29.132	71	73	71	73	78	75	75.3	78	70	731	744	704	726
	11	29.298	29.311	29.298	29.302	64	61	60	67	65	63	65.0	76	61	556	483	478	506
	12	29.366	29.371	29.366	29.368	58	62	60	60	68	63	63.7	68	57	456	476	478	467
	13	29.428	29.391	29.366	29.395	54	63	63	57	71	67	65.0	72	52	378	462	522	456
	14	29.378	29.467	29.315	29.387	62	71	67	65	77	70	70.7	77	62	516	678	652	605
	15	29.341	29.335	29.300	29.325	60	72	67	63	80	71	71.3	80	62	478	677	608	588
	16	29.288	29.348	29.318	29.318	66	66	64	69	69	67	68.3	73	64	599	529	556	563
	17	29.398	29.383	29.376	29.386	59	65	61	62	72	64	66.0	72	58	460	524	497	494
	18	29.404	29.348	29.341	29.364	65	70	66	67	75	69	70.3	75	54	591	666	599	619
	19	29.364	29.365	29.318	29.349	54	71	67	57	77	70	68.0	78	55	378	678	622	538
	20	29.353	29.292	29.230	29.292	61	74	70	64	79	74	72.3	80	62	497	772	679	649
	21	29.173	29.162	29.195	29.177	66	74	65	67	78	68	71.0	78	65	626	785	577	663
	22	29.096	29.196	29.254	29.182	58	62	60	60	65	63	62.7	68	59	456	516	478	483
	23	29.346	29.336	29.424	29.369	57	62	59	60	67	61	62.7	68	59	426	489	473	463
	24	29.537	29.558	29.526	29.540	51	60	56	53	67	59	59.7	52	68	348	425	409	394
	25	29.587	29.556	29.526	29.557	48	68	61	50	72	65	62.3	72	48	309	631	483	474
	26	29.580	29.485	29.445	29.496	55	70	69	57	77	72	68.7	77	55	407	639	644	563
	27	29.441	29.443	29.411	29.432	62	67	64	66	72	68	68.7	73	64	502	595	543	547
	28	29.416	29.371	29.356	29.381	54	65	64	58	70	67	65.0	70	56	365	550	556	480
	29	29.381	29.431	29.405	29.406	60	69	69	63	72	72	69.0	75	62	478	668	628	606
	30	29.508	29.480	29.590	29.526	70	75	73	72	80	77	76.3	80	68	706	800	757	754
	31	29.512	29.447	29.407	29.455	70	77	74	73	84	79	78.7	85	70	693	827	772	766
Means....		29.394	29.385	29.361	29.380	.....	.....	.....	65.2	74.9	70.3	70.1	.....	.....	542	659	610	604

northern and northwestern lakes, at Cleveland, Ohio.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	9 p. m.	9 p. m.	Mean.	7 a. m.	9 p. m.	9 p. m.	7 a. m.	9 p. m.	9 p. m.			7 a. m.	9 p. m.	9 p. m.		
691	623	783	766	S.....	S.....	W.....	4	12	4	5.7	S. 14 W.	5	4	5	.173	
684	751	783	806	W.....	W.....	SW.....	12	12	2	11.0	S. 76 W.	10	3	0	.118	.45
722	599	768	713	S.....	S. SW	S.....	4	12	4	6.7	S. 13 W.	3	3	4	.180	
799	734	774	769	S.....	W.....	Calm	4	2	0	1.5	S. 27 W.	9	5	6	.138	
446	768	793	802	NW.....	NE.....	NE.....	2	12	2	4.7	N. 37 E.	8	6	4	.164	.33
348	560	718	709	SE.....	W.....	S.....	4	12	2	3.7	S. 64 W.	0	3	3	.239	
744	691	815	750	W. SW	W. by N	S.....	4	12	2	5.0	S. 86 W.	0	2	6	.201	
398	731	804	811	NE.....	NE.....	NE.....	2	4	12	6.0	N. 45 E.	10	7	10	.138	.13
793	764	747	768	N. NE	N. NE	NE.....	4	4	2	3.3	N. 27 E.	1	5	10	.155	
731	802	786	773	E. SE	E.....	E.....	4	2	2	2.7	S. 79 E.	10	10	10	.128	.02
731	712	796	746	NE.....	N. NE	Calm	12	12	0	8.0	N. 35 E.	4	3	2	.167	.42
822	580	810	737	E. SE	W.....	N.....	2	2	25	8.0	N. 1 W.	0	0	10	.204	
756	731	822	770	N.....	N. NW	SE.....	12	2	2	4.0	N. 3 E.	6	5	3	.113	
756	708	793	752	SW.....	NE.....	S.....	4	2	2	1.3	S. 21 W.	4	3	2	.180	
708	735	888	777	S.....	SW.....	NE.....	2	2	2	0.7	South	10	10	10	.036	
819	780	838	809	NE.....	NE.....	NE.....	2	4	25	10.3	N. 45 E.	10	10	5	.046	.32
780	712	786	759	NE.....	W. NW	S.....	12	2	2	3.0	N. 49 E.	0	0	0	.187	
765	569	751	695	SW.....	W.....	S.....	4	2	2	2.3	S. 45 W.	0	3	0	.132	
765	751	843	786	SE.....	SW.....	W.....	4	2	12	3.8	S. 68 W.	10	10	10	.073	.85
836	768	854	819	SW.....	SW.....	Calm	2	2	0	1.3	S. 45 W.	0	8	0	.086	.25
796	951	804	850	S.....	N.....	S.....	2	2	2	0.7	South	10	7	10	.077	
841	793	843	826	N.....	NE.....	Calm	4	2	0	1.9	N. 15 E.	10	7	10	.091	.21
790	804	799	798	N. NE	N.....	S.....	2	2	2	0.7	N. 25 E.	7	0	0	.174	
836	771	900	836	SE.....	SE.....	SE.....	2	4	2	2.7	S. 45 E.	10	7	3	.099	.01
858	776	850	828	S.....	SW.....	W. NW	12	25	35	17.7	S. 72 W.	10	6	2	.124	
841	734	851	810	W.....	W. by N	S.....	12	2	2	4.7	S. 87 W.	0	3	4	.122	.04
843	741	817	800	S. SE	W.....	S.....	4	12	2	4.0	S. 65 W.	10	5	1	.095	.17
856	784	850	830	W.....	N. NE	NE.....	2	2	2	1.0	N. 4 E.	7	8	10	.177	
895	768	793	819	N.....	NW.....	SE.....	12	2	2	4.0	North	5	0	6	.160	.45
822	743	833	799	E. NE	NW.....	SE.....	2	2	2	0.7	N. 75 E.	0	0	0	.158	
738	764	848	783	E.....	NE.....	SE.....	2	2	2	1.6	East	0	0	0	.146	
808	732	811	784							0.9	N. 64 W.	5.4	4.6	4.7	4.281	3.63
843	657	819	773	S.....	NW.....	Calm	4	2	0	1.0	S. 28 W.	6	3	6	.149	
856	824	738	807	S.....	N.....	S.....	4	2	2	0.7	South	7	6	3	.125	.01
858	750	862	823	S.....	S.....	S.....	2	4	4	3.3	South	5	6	5	.138	
817	744	812	791	S.....	NW.....	N.....	2	2	2	0.7	N. 45 W.	3	10	7	.111	.21
900	734	812	815	NW.....	N.....	SE.....	12	2	2	3.9	N. 38 W.	10	3	3	.131	
858	782	854	831	S.....	W. SW	W.....	12	25	35	20.7	S. 70 W.	10	7	5	.120	
790	720	793	768	W. NW	W.....	SE.....	25	4	2	8.3	N. 74 W.	4	0	0	.154	.02
828	804	799	810	S.....		SE.....	4		2	2.5	S. 23 E.	0		0	.064	
898	782	860	847	S. SE	N.....	S.....	2	2	2	0.7	S. 25 E.	6	7	10	.284	
902	776	812	830	SW.....	W.....	W.....	12	12	2	8.0	S. 69 W.	8	0	7		.36
841	783	831	818	N.....	N.....	N.....	12	4	4	6.7	North	10	10	0	.047	.16
880	695	831	802	E.....	N. NE	S.....	2	4	2	1.3	N. 65 E.	10	5	0	.105	
812	618	790	710	S.....	N.....	SE.....	2	2	2	0.7	S. 45 E.	3	5	6	.136	
836	731	848	805	SE.....	N.....	SE.....	2	2	2	1.0	S. 74 E.	7	0	0	.093	
831	661	802	765	SE.....	N. NW	SE.....	2	4	2	0.5	N. 55 E.	5	0	0	.069	
846	846	841	844	NE.....	N.....	N.....	4	4	12	6.3	N. 8 E.	10	10	10	.207	
828	668	833	776	NE.....	NE.....	Calm	4	12	0	5.3	N. 45 E.	0	0	0	.154	
893	768	846	836	Calm	N.....	S.....	0	2	2			0	0	0	.042	
812	731	848	797	W.....	NW.....	S.....	2	2	2	1.0	S. 81 W.	5	4	0	.234	
833	779	810	807	SW.....	W.....	Calm	4	4	0	2.5	S. 77 W.	6	9	0	.104	
946	819	843	869	SW.....	N.....	NE.....	12	4	12	1.3	North	8	3	10	.098	
880	836	831	849	NL.....	NE.....	N.....	4	25	25	16.7	N. 24 E.	10	7	4	.102	.33
822	740	882	815	N.....	N.....	N.....	4	12	12	9.3	North	6	9	6	.119	.29
864	642	819	775	S.....	NW.....	S.....	2	2	2	1.0	S. 28 W.	3	2	0	.115	
856	804	783	814	SE.....	NW.....	S.....	2	2	2	0.7	South	0	0	0	.120	
874	689	850	804	SE.....	NW.....	S.....	2	2	2	0.7	South	0	0	0	.129	
786	758	793	779	N.....	N.....	NE.....	2	2	4	2.5	N. 23 E.	4	3	0	.141	
756	751	841	783												.037	
831	852	852	845												.018	
900	782	817	833	S.....	N. NE	SE.....	4	4	2	1.1	S. 59 E.	0	2	0	.124	.09
854	714	779	782	S. SE	NW.....	S.....	4	4	2	1.1	S. 24 W.	0	6	4		
849	749	823	807							1.3	N. 42 W.	5.2	4.2	2.9	3.280	1.47

Reductions of the monthly meteorological register of the army

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
Sept. 1	29.320	29.318	29.320	29.333	67	69	71	70	72	73	71.7	80	70	622	662	71	644	
2	29.283	29.230	29.225	29.246	70	75	72	72	77	75	74.7	77	71	704	741	74	744	
3	29.300	29.277	29.300	29.292	70	75	73	72	78	76	75.3	79	72	708	737	71	714	
4	29.362	29.327	29.287	29.325	74	75	74	75	80	78	77.7	81	70	826	806	73	804	
5	29.322	29.324	29.272	29.306	73	75	72	76	80	74	76.7	81	74	771	800	73	791	
6	29.465	29.268	29.265	29.333	66	69	66	67	73	69	69.7	75	65	626	655	63	644	
7	29.291	29.265	29.223	29.260	63	71	70	65	75	72	70.7	75	62	549	704	71	624	
8	29.057	29.114	29.190	29.120	70	74	74	72	80	77	76.3	82	72	757	758	73	754	
9	29.315	29.322	29.347	29.324	73	76	75	75	82	78	78.3	82	74	784	816	85	804	
10	29.370	29.341	29.289	29.333	75	77	76	77	84	80	80.3	85	73	841	832	84	824	
11	29.270	29.300	29.325	29.298	75	71	67	78	75	69	74.0	82	69	827	714	63	714	
12	29.391	29.395	29.370	29.385	65	74	69	67	78	72	72.3	78	60	591	785	62	644	
13	29.483	29.469	29.482	29.478	69	79	76	72	86	80	79.3	86	61	668	825	74	744	
14	29.510	29.454	29.442	29.469	73	79	70	77	84	73	78.0	86	68	757	832	80	814	
15	29.590	29.603	29.593	29.595	67	67	61	70	73	64	69.0	78	61	622	571	49	544	
16	29.618	29.560	29.463	29.547	56	70	67	58	80	70	69.3	80	57	422	548	62	534	
17	29.365	29.259	29.222	29.282	67	78	69	70	85	71	75.3	85	66	622	863	82	744	
18	29.293	29.456	29.502	29.417	60	55	56	62	58	58	59.3	71	55	491	383	41	444	
19	29.610	29.608	29.586	29.601	50	60	57	51	64	60	58.3	64	50	348	463	45	414	
20	29.582	29.503	29.497	29.527	50	67	61	52	72	61	62.7	72	50	334	525	45	414	
21	29.521	29.511	29.473	29.502	58	70	68	60	75	70	68.3	76	58	456	686	69	584	
22	29.520	29.532	29.510	29.521	65	63	68	68	77	70	71.7	78	67	577	322	62	514	
23	29.573	29.528	29.383	29.495	62	70	68	65	75	72	70.7	76	63	516	665	63	514	
24	29.448	29.388	29.345	29.394	70	72	66	72	76	68	72.0	76	67	706	731	61	614	
25	29.373	29.433	29.401	29.402	69	67	63	71	71	65	69.0	72	65	622	608	54	544	
26	29.504	29.504	29.556	29.521	57	62	56	58	65	59	60.7	67	56	452	516	40	444	
27	29.614	29.593	29.576	29.594	50	68	62	53	75	65	64.3	75	50	321	591	51	454	
28	29.504	29.558	29.541	29.534	56	69	65	59	79	68	68.7	79	56	409	574	57	514	
29	29.493	29.405	29.338	29.412	58	71	66	60	79	69	69.3	80	57	456	651	52	514	
30	29.331	29.288	29.266	29.295	59	59	57	61	66	59	62.0	71	50	473	407	43	444	
Means....	29.422	29.405	29.386	29.404	.....	.....	.....	66.8	75.8	69.9	70.8	.....	.....	545	677	629	62	
October 1	29.236	29.141	29.116	29.164	51	61	60	55	70	63	62.7	70	52	321	416	478	43	
2	29.212	29.232	29.250	29.231	52	55	52	55	60	56	57.0	66	53	349	357	335	34	
3	29.215	29.222	29.247	29.238	50	49	49	52	55	51	52.7	56	48	334	292	321	34	
4	29.273	29.207	29.300	29.290	47	51	51	49	54	53	52.0	56	47	297	335	347	34	
5	29.390	29.422	29.507	29.440	49	52	51	52	57	54	54.3	57	49	302	332	335	34	
6	29.627	29.614	29.525	29.589	47	58	50	50	64	53	55.7	64	47	283	416	321	34	
7	29.505	29.424	29.384	29.438	51	70	61	55	74	64	64.3	74	48	321	672	45	44	
8	29.349	29.356	29.324	29.343	60	62	60	62	67	63	64.0	69	62	491	423	478	46	
9	29.314	29.291	29.313	29.306	50	70	65	52	75	68	65.0	75	50	334	665	57	58	
10	29.486	29.381	29.378	29.415	57	72	61	60	76	64	66.7	76	60	426	731	49	51	
11	29.399	29.338	29.276	29.338	57	68	61	59	73	64	65.3	74	57	439	617	49	51	
12	29.359	29.362	29.402	29.374	57	52	43	60	55	47	54.0	67	17	426	349	135	16	
13	29.438	29.287	29.220	29.315	40	50	47	43	55	49	49.0	59	40	288	225	127	14	
14	29.495	29.965	29.955	29.005	40	55	52	42	59	56	52.3	59	40	121	386	338	32	
15	29.967	29.055	29.230	29.084	50	51	47	52	54	48	51.3	57	49	334	335	310	32	
16	29.403	29.413	29.433	29.416	42	48	41	45	51	44	46.7	53	43	288	235	228	14	
17	29.368	29.315	29.158	29.280	36	48	47	38	52	49	46.3	52	37	175	287	194	14	
18	29.028	29.180	29.933	29.080	50	49	46	52	52	49	51.0	54	49	334	387	155	14	
19	29.843	29.682	29.825	29.783	42	47	50	45	50	53	49.3	54	44	222	282	122	14	
20	29.943	29.997	29.110	29.017	45	50	50	49	57	53	53.0	57	47	247	262	121	14	
21	29.330	29.390	29.427	29.382	41	50	47	45	56	49	50.0	.....	.....	205	282	194	14	
22	29.531	29.423	29.340	29.431	34	59	51	37	62	55	51.3	62	32	157	460	321	33	
23	29.483	29.527	29.545	29.518	48	48	41	50	52	44	48.7	58	43	309	282	235	32	
24	29.593	29.603	29.576	29.591	35	47	42	38	51	45	44.7	54	35	165	270	124	14	
25	29.514	29.463	29.423	29.467	49	49	44	42	53	47	47.3	54	41	221	225	125	14	
26	29.376	29.327	29.343	29.349	41	50	47	45	52	49	48.7	52	43	205	334	197	14	
27	29.283	29.160	29.015	29.153	42	46	45	45	49	47	47.0	49	44	222	271	121	14	
28	29.988	29.103	29.314	29.135	44	38	37	47	41	39	42.3	47	37	249	190	194	11	
29	29.524	29.513	29.581	29.539	37	45	38	39	50	41	43.3	50	37	194	234	120	14	
30	29.712	29.608	29.538	29.619	31	45	43	34	50	46	43.3	51	33	139	234	228	14	
31	29.531	29.571	29.628	29.577	42	44	40	44	48	43	45.0	48	43	241	236	202	14	
Means....	29.333	29.305	29.311	29.316	.....	.....	.....	48.2	57.2	51.8	52.4	.....	.....	278	360	226	21	

*northern and northwestern lakes, at Cleveland, Ohio.*

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
848	.852	.902	.867	SE.	S	S	2	2	2	1.9	S. 15 E.	10	10	10	.....	1.50
900	.907	.858	.878	SW.	N	S	2	2	2	0.7	S. 45 W.	10	6	7	.037	1.34
900	.863	.860	.874	SW.	SW	SE.	2	2	2	1.5	S. 19 W.	10	6	0	.078	.05
952	.782	.819	.851	S.	NW	SE.	2	4	2	0.5	S. 67 W.	0	3	3	.014	.....
860	.782	.903	.848	SW.	NE	S	2	2	2	0.7	South	10	3	8	.104	.....
946	.807	.846	.866	SE.	N	SE.	2	2	2	1.0	N. 75 E.	10	2	0	.076	.10
890	.812	.900	.867	SE.	NE	S	2	4	2	1.3	S. 81 E.	3	10	10	.098	.01
900	.741	.862	.834	SW.	SW	SE.	12	2	2	4.7	S. 37 W.	10	4	5	.122	.66
901	.747	.863	.838	W	W	SE.	2	2	2	1.0	S. 62 W.	10	3	0	.123	.....
907	.714	.824	.815	S	S	S	2	4	2	2.7	South	5	6	0	.129	.....
763	.812	.896	.857	S. SW.	NW	SE.	4	2	2	1.3	S. 22 W.	10	0	0	.100	.....
753	.819	.852	.855	SE.	NE	S	2	4	2	1.0	S. 49 E.	0	0	0	.100	.16
852	.721	.924	.799	S	S	S	4	4	2	3.3	South	3	2	0	.127	.....
817	.792	.854	.821	S	S	S	4	4	2	3.3	South	2	5	0	.075	.....
848	.716	.833	.799	NE	NE	S	12	4	2	5.0	N. 49 E.	10	0	0	.119	.02
876	.585	.848	.770	S	S	S	2	2	2	2.0	South	0	0	0	.112	.....
848	.718	.899	.822	S	W	W	2	12	2	5.0	S. 82 W.	0	6	10	.017	.....
764	.816	.876	.859	NE.	NE	NE.	35	25	2	24.0	N. 45 E.	10	10	6	.071	.98
929	.780	.822	.844	SE.	N. NE	SE.	2	4	2	1.7	N. 81 W.	0	0	0	.084	.....
861	.758	.833	.817	S	N	S	2	2	2	0.7	South	0	6	0	.054	.....
740	.768	.898	.850	SW.	N	S	2	2	2	0.7	S. 45 W.	0	5	3	.089	.....
843	.419	.804	.720	SW.	NW	S	2	2	2	1.0	S. 49 W.	7	5	0	.057	.....
836	.768	.865	.803	S	N	SE.	2	2	2	0.7	S. 45 E.	6	6	10	.074	.....
900	.815	.895	.870	S	NW	S	12	4	4	4.7	S. 9 W.	5	10	10	.042	.....
899	.802	.890	.864	W	N. NE	S	25	4	4	7.7	S. 89 W.	10	0	0	.078	.40
937	.836	.818	.864	S	NE	Calm	4	12	0	1.0	S. 67 E.	5	0	0	.078	.04
798	.681	.836	.772	SE.	W	SE.	2	2	12	4.1	S. 39 E.	0	0	0	.098	.....
819	.580	.843	.747	S. SE	W	SE.	4	2	4	1.7	S. 10 E.	0	7	0	.067	.....
880	.657	.846	.794	S	SW	W	12	12	2	7.7	S. 27 W.	2	7	6	.096	.....
822	.636	.878	.799	SW.	W	W	2	25	25	17.0	S. 88 W.	10	2	2	.072	.20
878	.749	.859	.829	.....	.....	.....	.....	.....	.....	0.8	S. 26 W.	5.3	4.1	3.1	2.393	5.46
743	.570	.831	.715	S. SW	W	W. NW	4	4	12	5.3	N. 87 W.	0	3	6	.....	.....
805	.708	.747	.753	NW.	NW	N. NE	12	4	4	6.3	N. 33 W.	7	8	9	.....	.....
861	.620	.859	.780	NW.	W. NW	W. NW	12	25	35	23.7	N. 64 W.	8	10	9	.....	.....
853	.802	.864	.840	N. NW	NW	N. NW	25	25	35	24.0	N. 29 W.	6	10	10	.....	.11
794	.692	.802	.763	N	N	N	25	12	12	16.3	North	10	6	6	.....	.12
786	.675	.798	.753	S. SE	W	S	2	4	2	1.7	S. 40 W.	2	0	0	.....	.....
743	.810	.833	.795	S. SW	SW	SW	12	25	12	16.0	S. 39 W.	6	3	3	.....	.....
824	.740	.831	.818	SW.	NW	S	2	2	2	1.7	S. 55 W.	9	2	6	.....	.....
861	.768	.843	.824	S	W	S	4	2	2	2.1	S. 19 W.	0	3	0	.....	.....
822	.815	.833	.823	S. SW	W. NW	S	2	2	2	1.3	S. 41 W.	0	0	0	.....	.....
878	.761	.833	.824	SW	NW	SE.	2	2	2	0.7	S. 45 W.	0	0	0	.....	.....
872	.805	.698	.792	NE	NE	SE.	25	4	2	9.7	N. 48 E.	10	6	0	.....	.....
750	.681	.853	.761	SE.	SE	E	4	2	2	2.5	S. 56 E.	5	9	0	.....	.....
829	.761	.747	.779	SE.	NE	N. NE	2	2	25	9.0	N. 28 E.	0	10	3	.....	.....
861	.802	.925	.863	N	N	N	25	35	35	31.7	North	10	9	8	.....	.05
762	.790	.756	.769	N	W	S	12	2	2	3.7	N. 11 W.	6	10	10	.....	.02
811	.727	.853	.797	S. SE	S. by E	E	4	4	2	2.9	S. 30 E.	9	10	2	.....	.....
861	.794	.781	.812	S. SW	W	S	12	4	2	5.3	S. 32 W.	10	10	3	.....	.09
762	.786	.798	.782	W	W. SW	NW	4	25	4	10.0	S. 77 W.	10	10	4	.....	.15
710	.577	.798	.695	W. SW	NW	NW	25	45	25	27.8	N. 61 W.	10	9	.....	.....	.07
694	.627	.853	.721	W. NW	W	W	12	12	2	8.7	N. 80 W.	7	6	.....	.....	.....
712	.828	.743	.761	S	SW	S	2	2	2	1.9	S. 15 W.	0	3	10	.....	.....
856	.737	.802	.795	NE	NE	S	12	4	2	5.0	N. 50 E.	10	0	0	.....	.....
719	.722	.762	.734	SE.	NE	E	2	4	2	2.1	N. 77 E.	0	1	10	.....	.....
829	.733	.772	.778	E	NE	SE.	2	2	2	1.6	East	7	3	3	.....	.....
684	.861	.853	.799	SE.	NE	NE	2	4	25	9.7	N. 48 E.	10	10	10	.....	.....
762	.781	.847	.797	NE	NE	E	2	4	4	3.1	N. 63 E.	10	10	10	.....	.92
772	.738	.816	.775	SW.	W. SW	NW	12	35	35	21.7	N. 88 W.	10	10	10	.....	.53
816	.646	.738	.733	SW	W	SW	4	12	2	5.7	S. 75 W.	6	2	4	.....	.23
712	.646	.767	.708	S	W	S	2	2	4	2.1	S. 19 W.	5	5	10	.....	.....
836	.704	.750	.763	SW	W	S	2	2	2	1.7	S. 45 W.	10	10	10	.....	.06
794	.732	.806	.779	.....	.....	.....	.....	.....	.....	4.5	N. 46 W.	6.2	6.4	5.4	.....	2.35



Reductions of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.											VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.			
1866.					o	o	o	o	o	o	o	o	o						
Jan. 1	29.597	29.639	29.713	29.650	25.5	28.0	20.0	22.0	31.0	22.0	27.0	35.0	21.0	109.	119.	085.	107.		
2	29.683	29.541	29.482	29.571	8.0	33.0	21.0	9.0	37.5	23.0	23.2	34.0	8.0	051.	139.	064.	09		
3	29.393	29.364	29.430	29.396	19.0	29.0	20.0	20.5	32.5	25.0	26.0	33.0	19.0	086.	120.	035.	08		
4	29.491	29.569	29.701	29.587	17.0	18.0	9.0	18.3	19.0	10.0	15.7	25.0	9.0	071.	087.	054.	07		
5	29.705	29.726	29.754	29.728	12.0	15.0	14.0	13.0	17.0	15.0	15.0	18.0	5.0	063.	063.	071.	06		
6	29.754	29.599	29.793	29.715	15.0	27.0	17.0	17.0	30.0	19.0	22.0	30.0	14.0	063.	113.	071.	06		
7	30.244	30.316	30.444	30.321	13.0	14.0	8.5	14.0	16.0	10.5	13.5	19.0	8.5	067.	059.	046.	05		
8	30.641	30.573	30.510	30.575	-5.0	15.0	1.0	-5.0	18.0	2.0	5.0	18.0	-7.0	034.	052.	031.	04		
9	30.366	30.227	30.099	30.234	-2.0	27.0	15.0	-2.0	31.0	17.0	15.3	31.5	-3.0	039.	101.	063.	04		
10	29.831	29.621	29.588	29.680	21.5	29.0	28.0	22.5	31.5	30.0	28.0	31.5	15.0	104.	131.	137.	12		
11	29.600	29.426	29.352	29.460	30.5	34.0	34.0	32.0	37.0	35.0	34.7	37.0	29.0	158.	157.	183.	16		
12	29.145	29.038	28.970	29.051	34.0	39.0	11.0	36.0	41.0	43.0	40.0	42.0	34.0	170.	212.	231.	24		
13	29.150	29.227	29.428	29.268	32.5	32.0	6.0	35.0	35.0	29.0	33.0	43.0	27.0	152.	142.	106.	13		
14	29.783	29.785	29.816	29.795	10.0	22.0	14.0	11.0	24.0	15.5	16.8	22.0	9.0	057.	095.	065.	07		
15	29.577	29.229	28.821	29.229	17.5	17.0	29.5	19.0	20.0	30.5	23.2	30.5	13.0	079.	060.	146.	06		
16	29.156	29.263	29.413	29.277	19.0	24.0	19.5	20.0	27.0	22.0	23.0	33.0	18.0	092.	095.	077.	07		
17	29.391	29.151	29.183	29.242	18.0	32.0	32.5	20.0	35.0	34.5	29.8	35.5	18.0	076.	142.	132.	12		
18	29.208	29.167	29.205	29.193	23.0	42.0	28.0	25.0	46.0	30.0	33.7	46.0	24.0	100.	215.	130.	14		
19	29.115	29.216	28.929	29.097	32.0	42.0	44.0	34.0	47.0	47.0	42.7	47.0	24.0	155.	232.	249.	22		
20	29.446	29.619	29.793	29.596	7.5	8.0	3.0	9.0	9.0	4.0	7.3	52.0	4.0	044.	051.	032.	04		
21	29.731	29.617	29.573	29.640	5.0	13.0	10.0	6.0	15.0	11.0	10.7	15.0	-0.5	032.	056.	057.	03		
22	29.533	29.606	29.639	29.593	12.0	23.0	17.5	13.0	27.5	19.5	20.0	27.5	9.0	063.	072.	062.	06		
23	29.661	29.591	29.649	29.634	19.0	23.0	23.0	20.0	25.0	24.0	23.0	25.0	14.0	092.	100.	112.	10		
24	29.569	29.441	29.253	29.421	23.5	25.0	24.0	25.0	27.0	25.0	25.7	27.0	15.0	109.	112.	117.	11		
25	29.271	29.273	29.335	29.293	23.0	27.5	18.5	24.0	31.0	20.0	25.0	13.0	14.0	112.	110.	023.	10		
26	29.263	29.298	29.325	29.295	21.0	40.0	8.0	22.5	44.0	9.0	25.2	44.0	9.0	096.	195.	051.	11		
27	29.494	29.503	29.535	29.511	6.0	29.0	23.0	7.0	31.0	24.0	20.7	31.0	4.0	046.	137.	112.	09		
28	29.361	29.270	29.178	29.270	21.5	31.0	28.0	23.0	35.0	29.0	29.0	37.0	20.0	092.	122.	142.	12		
29	29.355	29.334	29.300	29.330	29.0	37.0	32.0	31.0	42.0	34.0	35.7	42.0	26.0	137.	155.	155.	14		
30	29.175	29.217	29.415	29.269	33.0	35.0	27.0	35.0	38.0	29.0	34.0	39.0	29.0	162.	165.	124.	13		
31	29.313	29.205	29.085	29.201	22.0	31.0	30.0	24.0	38.0	34.0	32.0	38.0	22.0	095.	093.	121.	12		
Means...	29.541	29.506	29.507	29.518	.....	.....	.....	19.6	29.9	23.3	24.3	.....	.....	091.	118.	104.	10		
Feb. 1	29.113	29.110	29.200	29.141	24.0	25.0	21.0	26.0	30.0	22.5	26.2	34.0	22.0	106.	075.	096.	07		
2	29.196	29.138	29.258	29.197	20.0	21.0	14.0	22.0	24.0	15.0	20.3	24.0	14.0	085.	079.	071.	07		
3	29.519	29.339	29.424	29.361	12.0	11.0	7.5	13.5	13.0	9.5	12.0	15.0	9.0	058.	049.	042.	06		
4	29.427	29.542	29.761	29.577	11.0	11.0	8.5	12.0	12.0	10.0	11.0	12.0	5.0	061.	061.	046.	06		
5	29.900	29.850	29.775	29.842	3.5	15.5	13.0	3.5	18.5	15.5	12.5	18.5	2.0	051.	054.	050.	06		
6	29.955	29.907	29.796	29.886	13.0	24.0	16.0	14.0	27.0	17.5	19.5	29.0	12.0	067.	095.	073.	08		
7	29.667	29.542	29.557	29.589	13.0	35.0	33.0	15.0	41.0	35.0	30.3	43.0	11.0	056.	126.	162.	12		
8	29.435	29.425	29.423	29.428	31.0	32.0	24.0	33.0	35.0	25.0	31.0	35.0	24.0	151.	142.	117.	13		
9	29.358	29.148	29.075	29.194	23.0	31.0	32.0	25.0	36.0	35.0	32.0	36.0	20.0	100.	116.	142.	12		
10	29.155	29.125	29.167	29.149	25.0	40.0	33.0	27.0	44.0	35.0	35.3	44.0	25.0	112.	195.	162.	13		
11	29.275	29.400	29.543	29.406	26.0	30.0	23.0	27.0	33.0	24.0	28.0	35.0	24.0	129.	132.	112.	14		
12	29.583	29.467	29.522	29.524	23.5	33.0	22.0	24.0	37.0	23.5	28.2	37.0	20.0	120.	136.	101.	15		
13	29.518	29.502	29.358	29.459	25.5	33.0	29.0	27.0	35.0	31.0	31.0	35.5	23.0	112.	162.	137.	17		
14	29.058	29.043	29.325	29.142	30.0	30.0	-3.0	31.0	30.0	-2.0	19.7	33.5	-2.0	155.	167.	027.	16		
15	29.564	29.616	29.791	29.657	-8.0	4.0	-8.0	-8.0	5.0	-8.0	1.7	5.0	-9.0	030.	041.	029.	05		
16	29.990	29.844	29.761	29.865	-18.0	13.5	8.0	-18.0	16.5	10.0	2.8	16.5	-19.0	018.	046.	040.	06		
17	29.745	29.628	29.593	29.655	16.0	35.0	26.0	18.0	43.0	27.5	29.5	43.0	8.0	007.	101.	123.	07		
18	29.501	29.240	29.200	29.316	28.0	40.0	24.0	24.0	42.0	26.0	32.3	42.0	17.0	142.	221.	106.	18		
19	29.078	29.013	29.220	29.104	28.5	32.0	28.0	30.0	32.0	30.0	32.7	32.0	26.0	139.	103.	137.	19		
20	29.311	29.470	29.633	29.471	20.0	30.0	20.0	21.5	34.0	21.5	25.7	31.0	20.0	091.	121.	091.	20		
21	29.628	29.617	29.564	29.623	19.0	39.0	38.0	21.0	51.0	41.0	37.7	52.0	18.0	020.	021.	190.	21		
22	29.526	29.503	29.526	29.518	39.0	51.0	37.0	42.0	61.0	41.5	48.2	61.0	40.0	199.	242.	162.	22		
23	29.416	29.214	29.051	29.227	35.0	59.0	49.0	38.0	56.0	51.0	48.3	56.0	36.0	165.	222.	221.	23		
24	29.220	29.264	29.420	29.301	28.0	30.0	23.0	30.0	35.0	26.0	30.3	51.0	26.0	130.	102.	029.	24		
25	29.784	29.841	29.938	29.854	14.0														

*northern and northwestern lakes, at Monroe City, Michigan.*

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
711	.685	.721	.706	SW ...	SW ...	W.....	25	12	12	14.3	S. 55 W.	9	8	5		
724	.577	.730	.697	W.....	W.....	E.....	4	4	2	2.0	West ..	1	0	1		
780	.649	.378	.602	S.....	W.....	W.....	4	4	35	13.3	S. 84 W.	0	9	9		
692	.845	.791	.776	W.....	NW ..	NW ..	45	12	12	21.3	N. 74 W.	10	7	0		
810	.671	.823	.768	SW ...	W. SW	W.....	12	12	4	9.0	S. 61 W.	10	10	10		
671	.675	.692	.679	S.....	E.....	N.....	2	4	4	1.7	N. 67 E.	9	1	0		.01
816	.659	.687	.721	E. NE	NE....	NE....	35	35	35	34.3	N. 52 E.	1	3	10		
000	.525	.718	.748	N. NE	E.....	E.....	12	4	2	5.0	N. 43 E.	1	4	0		
000	.582	.671	.751	E.....	SE....	S.....	2	4	4	2.7	S. 35 E.	0	0	0		
862	.740	.782	.795	SE....	S. SW	S.....	2	4	2	2.3	S. 1 W.	10	10	10		.04
894	.712	.898	.835	E. SE	SE....	SE....	2	2	4	2.3	S. 51 E.	10	10	10		.22
802	.824	.833	.820	SE....	E.....	W.....	2	4	12	2.3	N. 79 W.	10	10	9		.29
794	.698	.665	.719	W.....	W.....	NW ..	35	4	12	16.0	N. 80 W.	10	10	10		.02
797	.738	.739	.758	N.....	NE....	NE....	12	12	25	15.7	N. 35 E.	0	5	10		
768	.556	.841	.722	E. NE	NE....	E.....	60	60	35	49.0	N. 64 E.	10	10	10		
850	.614	.625	.715	W.....	W.....	W.....	35	25	12	24.0	West ..	10	1	10		.55
702	.698	.794	.731	W. SW	S. SW	W.....	2	12	2	4.7	S. 37 W.		10	10		.02
746	.691	.782	.740	W.....	E.....	E.....	2	2	4	1.3	East....	5	1	10		.02
792	.624	.772	.729	E.....	E.....	S.....	2	2	2	1.7	S. 67 E.	8	10	10		
676	.784	.740	.730	W. SW	W. SW	W.....	60	60	45	54.0	S. 74 W.	7	3	1		.10
647	.648	.797	.697	W.....	W.....	W.....	45	45	12	34.0	West ..	8	2	0		
810	.480	.629	.640	S. SW	SW ..	W.....	12	12	2	8.3	S. 38 W.	1	2	8		
850	.746	.868	.821	NE....	NE....	NE....	2	4	4	3.3	N. 45 E.	10	10	10		.01
809	.761	.872	.814	NE....	SE....	SE....	4	2	2	1.9	East....	10	10	9		.46
868	.633	.776	.759	SW ...	W.....	NW ..	2	2	12	4.7	N. 58 W.	9	8	3		.16
794	.677	.784	.752	NW ...	NW ...	N.....	2	2	2	1.7	N. 33 W.	3	2	1		
769	.788	.808	.808	NW ...	NE....	E.....	2	2	2	1.0	N. 41 E.	10	10	10		
797	.628	.887	.771	SW ...	S.....	S.....	2	12	2	5.3	S. 5 W.	10	10	9		
788	.577	.792	.719	S.....	S.....	E.....	2	4	4	2.7	S. 30 E.	10	10	3		.02
797	.719	.775	.764	W.....	W.....	W.....	2	4	4	3.3	West ..	10	9	0		
738	.408	.617	.588	W. SW	SW ...	W.....	12	45	25	28.7	S. 65 W.	0	3	8		
.794	.666	.753	.738							4.2	N. 86 W.	5.9	6.4	6.0		1.92
.754	.465	.794	.671	NW ...	W.....	NW ...	25	35	4	19.7	N. 70 W.	8	1	0		
.721	.610	.823	.718	W. NW	NW ...	NW ...	4	25	12	13.3	N. 47 W.	9	5	1		
.721	.623	.479	.608	W. SW	W. SW	SW ...	25	35	35	31.0	S. 60 W.	10	10	10		.02
.804	.804	.687	.765	W.....	W.....	SW ...	12	12	4	9.0	S. 84 W.	0	3	4		
1.000	.533	.568	.700	S.....	S.....	W.....	12	25	12	13.0	S. 18 W.	5	8	0		
.816	.644	.757	.739	W. SW	E.....	E.....	4	2	4	1.0	S. 61 E.	10	5	3		
.648	.488	.797	.644	SE....	SE....	E.....	2	2	2	1.7	S. 61 E.	4	2	10		
.800	.698	.872	.790	NE....	NE....	NE....	2	4	4	3.3	N. 45 E.	10	10	10		.07
.746	.550	.698	.665	E.....	SE....	E.....	2	4	2	2.3	S. 69 E.	10	10	10		.14
.761	.677	.797	.745	NW ...	NW ...	N.....	2	2	4	2.3	N. 21 W.	10	10	10		
.880	.703	.808	.817	N.....	N.....	N.....	25	25	4	13.7	North ..	10	10	1		.65
.934	.619	.800	.784	NE....	NE....	E. NE	4	2	12	6.0	N. 61 E.	10	3	10		.01
.761	.797	.788	.782	S.....	E.....	E.....	2	2	12	5.0	S. 83 E.	10	9	10		
.893	1.000	.671	.855	S.....	SW ...	W.....	4	45	15	24.3	S. 65 W.	10	10	3		.30
1.000	.750	1.000	.917	W.....	W.....	W.....	45	35	25	35.0	West ..	3	3	0		
1.000	.500	.582	.694	SW ...	W. SW	S.....	4	25	25	15.0	S. 34 W.	1	0	10		
.682	.357	.824	.621	S. SW	S.....	S.....	12	4	4	6.7	S. 12 W.	0	1	0		
.887	.829	.754	.823	S.....	SE....	SW ...	2	2	2	1.6	South ..	10	10	10		
.836	.450	.782	.689	SW ...	SW ...	W. SW	2	12	12	8.3	S. 57 W.	10	10	10		.15
.787	.617	.787	.730	W. SW	W. SW	W.....	12	12	4	9.3	S. 71 W.	3	2	8		.02
.712	.216	.758	.555	E.....	SE....	S. SW	4	2	2	2.0	S. 55 E.	5	3	1		
.744	.452	.614	.603	SW ...	S.....	S.....	12	2	4	5.7	S. 30 W.	3	5	9		
.719	.627	.859	.735	E.....	S.....	SW ...	2	4	12	4.7	S. 27 W.	9	5	10		
.782	.537	.634	.651	W. SW	SW ...	W. SW	45	4	45	31.3	S. 67 W.	10	0	4		.38
.823	.712	.784	.773	W. SW	W. SW	NW ...	60	45	12	36.7	S. 73 W.	3	5	1		
.750	.675	.761	.729	S.....	S.....	S. SW	4	4	2	3.0	S. 5 W.	3	5	5		
.682	.439	.788	.639	S.....	SE....	E.....	2	2	2	1.7	S. 45 E.	0	1	0		
.788	.577	.719	.695	E.....	E.....	E.....	25	4	4	11.0	East....	9	1	1		
.799	.605	.751	.718							7.1	S. 79 W.	6.6	5.2	5.4		1.74



*Reductions of the monthly meteorological register of the survey of*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.		
1866.					0	0	0	0	0	0	0	0	0					
March	1	29.479	29.405	29.425	29.436	38	54	39	41	62	42	48.3	62	38	190	312	159	233
	2	29.424	29.331	29.348	29.368	38	48	52	40	53	55	49.3	55	38	203	299	349	271
	3	29.556	29.524	29.560	29.547	32	38	28	34	45	32	37.0	55	32	155	138	117	155
	4	29.598	29.621	29.693	29.637	22	22.5	22.5	24	26	24	24.7	32	23	095	040	103	083
	5	29.771	29.700	29.725	29.732	17	29	25	19	34	27	26.7	37	18	071	103	112	086
	6	29.781	29.714	29.680	29.725	17	33	30	19	39	31	30.7	46	17	071	110	121	101
	7	29.638	29.585	29.683	29.635	25	28	20.5	27	33	23	27.7	33.5	23	112	096	081	099
	8	29.726	29.698	29.645	29.689	16	29	25	18	36	28	27.3	38	16	067	080	100	081
	9	29.505	29.483	29.745	29.578	23	30	18	25	34	19.5	26.2	34	18	100	121	081	101
	10	29.799	29.648	29.338	29.595	11	31	29	12	37	31	26.7	37	10	061	105	137	101
	11	29.095	29.089	29.230	29.138	37	41	39	40	47	42	43.0	47	31	181	179	159	179
	12	29.386	29.451	29.564	29.467	32	36	34	34	42	36	37.3	42	32	155	134	170	153
	13	29.650	29.627	29.557	29.611	31	36	34	32	39	35	35.3	41	31	162	173	183	173
	14	29.467	29.477	29.469	29.471	34	39	35	35	40	36	37.0	40	33	183	225	191	205
	15	29.507	29.307	29.314	29.376	33	36	35	34	39	36	36.3	39	33	175	173	191	180
	16	29.213	29.137	29.271	29.207	28	30	18	30	32	21	27.7	36	19	130	144	065	113
	17	29.441	29.497	29.602	29.513	13	17	8	14	19	10	14.3	20	9	067	071	040	069
	18	29.321	29.228	29.211	29.253	20	34	30	21	38	33	30.7	39	7	096	144	132	124
	19	29.363	29.390	29.420	29.391	26	31	24	27	34	26	29.0	34.5	25	129	139	106	135
	20	29.285	29.053	29.807	29.382	26	28	32	27	31	33.5	30.5	32.5	22	129	119	162	137
	21	29.128	29.318	29.483	29.310	26	27	22	27.5	31	24	27.5	34	24	123	101	095	106
	22	29.638	29.538	29.407	29.528	21	37	31	23	45	33	33.7	46	20	090	116	151	119
	23	29.190	29.282	29.365	29.279	34	35	28	36	41	31	36.0	43	31	170	126	119	138
	24	29.380	29.270	29.270	29.286	26	34	23.5	29	37	25.5	30.5	38	25	106	157	103	122
	25	29.393	29.453	29.559	29.468	16	20	15.5	18	24	18	20.0	26	16	067	062	059	063
	26	29.704	29.733	29.754	29.730	12	26	22	13	30	25	22.7	34	12	063	095	084	081
	27	29.853	29.814	29.715	29.794	18	34	28	20	38	30	29.3	38	18	076	092	130	099
	28	29.363	29.170	29.243	29.259	29	31	33	30	36	36	34.0	39	28	149	116	149	132
	29	29.380	29.333	29.480	29.398	25	34	28	23	38	30	32.0	38	27	100	144	130	125
	30	29.478	29.230	29.170	29.293	18	36	31	20	42.5	33	31.8	44	18	076	127	151	116
	31	28.830	29.833	29.184	28.949	36	40	4	39	49	43	43.7	53	32	173	130	206	170
Means....		29.463	29.415	29.481	29.453	.....	.....	.....	27	37.8	30.6	31.8	.....	.....	120	135	136	130
April	1	29.372	29.294	29.340	29.302	36	43	35	38	50	37	41.7	50	37	186	186	178	183
	2	29.334	29.424	29.488	29.415	35	35	35	37	40	37	38.0	40	35	178	139	178	165
	3	29.462	29.384	29.398	29.415	36	45	38	37	49	41	42.3	51	35	199	247	190	219
	4	29.376	29.261	29.224	29.287	35	64.5	50	37	76	55	56.0	78	35	178	453	295	309
	5	29.267	29.439	29.560	29.422	57	50	41	62.5	58	45	55.2	65	44	392	255	265	284
	6	29.656	29.595	29.692	29.648	31	36	30	34	42	34	36.7	44	32	139	134	121	131
	7	29.700	29.587	29.590	29.626	28	37	29	30	42.5	31	34.5	42.5	29	130	149	137	138
	8	29.610	29.574	29.624	29.603	31	37	29	34	45	31	36.7	45	28	139	116	137	131
	9	29.698	29.669	29.639	29.669	23	40	31	24.5	50	35	36.5	55	22	106	117	128	117
	10	29.446	29.328	29.353	29.376	43	50	48	47	59	51	52.3	59	33	225	242	296	254
	11	29.403	29.347	29.370	29.373	36	54.5	43	39	64	47	50.0	64	37	173	290	225	232
	12	29.298	29.098	29.279	29.225	48	62	49	54	76.5	51	60.5	77	41	256	362	321	313
	13	29.597	29.587	29.480	29.555	38.5	49	39	41	57	41.5	46.5	58	39	204	242	206	217
	14	29.348	29.255	29.415	29.339	39	55	43	42	65	47	51.3	65	40	199	300	225	241
	15	29.615	29.530	29.535	29.560	39	49	40	43	57	43	47.7	57	40	186	242	208	212
	16	29.629	29.461	29.449	29.513	36	50	44	38	56	49	47.7	56	34	186	282	223	227
	17	29.505	29.474	29.495	29.491	49.5	55	51	52	64	54	56.7	64	44	321	314	335	323
	18	29.539	29.478	29.461	29.493	54	63	65	56	77	69	67.7	77	52	391	389	564	448
	19	29.474	29.403	29.364	29.414	58	64	54	60.5	69	56	61.8	72	56	449	529	391	456
	20	29.219	29.143	29.105	29.156	60	67	61	63	77	64	68.0	76	53	478	527	497	501
	21	29.075	29.025	29.033	29.049	59	56	57	63	70	59	64.0	72	59	447	263	439	383
	22	29.106	29.105	29.075	29.095	48	59	55	53	70	58	60.3	70	46	269	354	393	339
	23	28.851	28.839	28.986	28.892	40	39.5	41	44	45	43	47.3	57	42	195	171	211	199
	24	29.025	28.994	29.059	29.026	36	45	41	42	55	46	47.7	54	36	134	162	192	165
	25	29.067	29.058	29.214	29.113	33	42	40	40	53	44	45.7	56	39	097	123	195	112
	26	29.383	29.357	29.347	29.362	3												

the northern and northwestern lakes, at Monroe City, Michigan.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
738	561	744	681	E.....	E.....	E.....	4	2	4	3.3	East.....	9	4	0		
820	667	805	764	E.....	E.....	W.....	2	4	25	9.7	West.....	4	10	5		.03
792	459	594	615	W.NW.	W.....	W.....	12	35	25	24.0	N. 87 W.	0	1	0		.04
738	574	803	705	NW.....	NW.....	NW.....	45	45	45	45.0	N. 45 W.	9	9	10		
692	524	761	659	NW.....	NW.....	NW.....	12	12	12	12.0	N. 45 W.	0	1	0		
692	463	617	591	SW.....	SW.....	SW.....	4	25	4	11.0	S. 45 W.	0	5	10		
761	510	663	645	N.....	NW.....	NW.....	25	25	35	26.3	N. 32 W.	3	5	0		
682	376	655	571	W.....	W.NW.	NW.....	12	25	4	13.0	N. 72 W.	0	3	0		
746	617	772	712	W.....	W.....	NW.....	4	4	4	37.0	N. 76 W.	10	8	0		
804	476	788	689	NW.....	W.....	NE.....	2	2	4	1.7	N. 9 W.	0	5	10		.05
732	554	744	677	NE.....	E.....	E.....	4	12	2	5.4	N. 86 E.	10	10	10		.31
792	500	802	698	SE.....	NW.....	NW.....	2	4	4	2.0	N. 45 W.	10	10	10		.19
896	726	898	840	NE.....	NE.....	NE.....	4	4	25	11.0	N. 45 E.	10	10	10		.58
898	910	900	903	NE.....	N.....	N.....	4	4	4	3.7	N. 11 E.	10	10	10		.30
895	726	900	840	N.NE.	NE.....	W.SW.	4	2	12	2.7	N. 86 W.	10	9	10		.15
782	794	570	715	W.....	W.SW.	W.SW.	4	45	45	31.3	S. 69 W.	8	10	2		.05
816	692	582	697	W.....	W.....	W.....	12	25	4	13.7	West.....	4	4	0		.02
855	628	703	729	W.SW.	W.....	W.....	25	35	12	23.7	S. 82 W.	10	5	10		.12
880	712	754	782	NE.....	NE.....	NE.....	4	4	4	4.0	N. 45 E.	10	10	10		.32
880	685	841	802	E.NE.	NE.....	NE.....	25	35	35	31.0	N. 51 E.	10	10	10		.40
824	582	738	715	NE.....	NW.....	NW.....	25	25	4	13.0	N. 3 W.	10	4	1		
730	386	800	639	SW.....	SW.....	E.NE.	4	4	4	1.7	S. 13 W.	3	3	9		.14
802	488	685	658	SW.....	W.....	W.....	2	35	12	16.0	S. 88 W.	10	5	10		
665	712	750	709	W.NW.	W.....	NW.....	4	12	25	13.0	N. 60 W.	7	10	5		.06
682	483	603	589	NW.....	W.....	NW.....	25	35	35	29.7	N. 61 W.	10	5	5		
810	569	622	667	NW.....	NW.....	W.....	4	12	2	6.0	N. 49 W.	0	3	0		
702	343	782	609	N.....	NE.....	NE.....	2	25	35	20.7	N. 44 E.	0	5	9		.10
890	550	705	715	NE.....	NE.....	S.....	35	4	12	10.3	N. 61 E.	10	10	9		.12
655	628	782	688	NW.....	NW.....	NW.....	35	25	25	28.3	N. 45 W.	3	7	0		
702	466	800	656	W.....	SW.....	SE.....	4	4	4	2.3	S. 35 W.	0	5	10		
726	373	750	616	SE.....	SW.....	SE.....	4	60	12	24.0	S. 42 W.	10	4	9		.08
777	573	739	696							25.3	N. 57 W.	6.1	6.4	5.9		3.06
811	515	807	711	N.....	NE.....	E.....	4	25	4	10.4	N. 45 E.	3	1	9		
807	557	807	724	NE.....	NE.....	E.....	45	25	25	29.7	N. 57 E.	10	10	10		.02
903	710	738	784	NE.....	NE.....	E.....	12	12	4	9.0	N. 51 E.	2	3	3		.12
897	505	681	664	SE.....	S.....	SW.....	2	2	2	1.6	South ..	0	3	0		
694	529	684	636	SW.....	SW.....	W.SW.	4	45	35	27.3	S. 54 W.	9	2	10		
712	540	617	610	W.....	W.NW.	NW.....	4	25	4	10.7	N. 67 W.	9	4	10		
782	545	788	705	NW.....	NW.....	NW.....	12	12	4	9.3	N. 45 W.	9	7	10		
712	386	728	629	N.....	N.....	NW.....	4	4	4	3.7	N. 15 W.	1	5	0		
807	322	628	586	N.....	NE.....	NE.....	2	12	2	5.0	N. 41 E.	0	1	1		
698	484	790	657	E.....	E.SE.	SW.....	4	12	4	4.7	S. 59 E.	2	5	9		
726	502	698	642	W.....	E.....	E.....	2	12	2	4.0	East.....	0	1	0		
613	328	859	623	E.....	S.....	W.....	35	35	35	11.7	South ..	2	4	4		
781	521	784	695	N.....	NE.....	E.....	2	12	4	5.3	N. 49 E.	0	2	0		.20
744	487	698	643	W.....	SW.....	N.....	12	35	4	14.0	S. 61 W.	9	4	1		
669	521	750	617	NE.....	E.....	NE.....	4	4	4	3.7	N. 61 E.	3	1	1		
811	627	638	692	NE.....	NE.....	E.....	4	25	4	10.7	N. 50 E.	3	0	0		
827	527	802	719	E.....	E.NE.	SE.....	12	25	4	12.7	N. 80 E.	3	3	5		
872	419	796	696	SE.....	S.....	SE.....	2	2	2	2.0	S. 13 E.	7	5	10		
852	747	872	824	SE.....	SE.....	NE.....	2	12	25	9.3	N. 75 E.	2	5	7		.42
831	569	833	714	SE.....	S.....	S.....	2	4	2	2.3	S. 17 E.	10	9	0		
776	359	878	671	S.SW.	SW.....	W.....	12	45	2	19.0	S. 42 W.	1	5	0		.14
667	482	816	655	NW.....	NW.....	N.....	4	2	4	3.0	N. 27 W.	0	0	7		
677	571	833	694	NE.....	NE.....	N.....	35	25	2	20.3	N. 43 E.	0	8	5		
500	388	617	502	NW.....	NW.....	W.....	45	35	45	38.7	N. 61 W.	1	5	5		
393	306	677	459	NW.....	NW.....	NW.....	45	35	25	35.0	N. 45 W.	2	1	0		
537	432	853	607	W.....	W.....	SW.....	25	4	2	10.0	S. 87 W.	0	0	0		
850	493	722	688	NE.....	NE.....	NE.....	4	45	25	24.7	N. 45 E.	5	3	5		
765	281	802	616	S.....	SW.....	W.....	4	60	4	22.0	S. 45 W.	6	4	0		
508	220	653	490	W.....	W.....	NE.....	25	45	12	20.7	N. 82 W.	2	1	1		
824	309	850	691	NE.....	NE.....	NE.....	2	25	12	13.0	N. 45 E.	3	7	10		
735	377	758	657							3.0	N. 27 W.	3.8	3.6	4.1		.80

*Reductions of the monthly meteorological register of the survey*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.	TEMPERATURE—FAHRENHEIT.												VAPOR.				
						Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.						Elasticity, in U. S. inches and decimals.			
		7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.
1866.					°	°	°	°	°	°	°	°	°					
March	1	29.479	29.405	29.425	29.436	38	54	39	41	62	42	48.3	62	38	190	312	179	243
	2	29.424	29.331	29.348	29.368	38	48	52	40	53	55	49.3	55	38	203	262	349	274
	3	29.556	29.524	29.560	29.547	32	38	28	34	45	32	37.0	55	32	155	132	108	134
	4	29.598	29.621	29.693	29.637	22	22.5	22.5	24	26	24	24.7	32	23	99.5	980	103	985
	5	29.771	29.700	29.725	29.732	17	29	25	19	34	27	26.7	37	18	971	103	112	982
	6	29.781	29.714	29.680	29.725	17	33	30	19	39	34	30.7	46	17	971	110	121	104
	7	29.638	29.585	29.683	29.635	25	28	20.5	27	33	23	27.7	33.5	23	112	996	981	997
	8	29.726	29.698	29.645	29.689	16	29	25	18	36	28	27.3	38	16	967	980	100	982
	9	29.505	29.483	29.745	29.578	23	30	18	25	34	19.5	26.2	34	18	100	121	981	101
	10	29.799	29.648	29.338	29.595	11	31	29	12	37	31	26.7	37	10	961	103	137	104
	11	29.095	29.089	29.230	29.138	37	41	39	40	47	42	43.0	47	31	181	179	199	186
	12	29.386	29.451	29.564	29.467	32	36	34	34	42	36	37.3	42	32	155	134	170	153
	13	29.650	29.627	29.557	29.611	31	36	34	32	39	35	35.3	41	31	162	173	183	172
	14	29.467	29.477	29.469	29.471	34	39	35	35	40	36	37.0	40	33	183	225	191	200
	15	29.507	29.307	29.314	29.376	33	36	35	34	39	36	36.3	39	33	175	173	191	180
	16	29.213	29.137	29.271	29.207	28	30	18	30	32	21	27.7	36	19	130	144	965	113
	17	29.441	29.497	29.602	29.513	13	17	8	14	19	10	14.3	20	9	967	971	940	936
	18	29.321	29.228	29.211	29.253	20	34	30	21	38	33	30.7	39	7	996	144	132	124
	19	29.363	29.390	29.420	29.391	26	31	24	27	34	26	29.0	31.5	25	129	132	106	123
	20	29.285	29.053	29.807	29.382	26	28	32	27	31	33.5	30.5	32.5	22	129	119	162	125
	21	29.128	29.318	29.483	29.310	26	27	22	27.5	31	24	27.5	34	24	123	101	992	106
	22	29.638	29.538	29.407	29.528	21	37	31	23	45	33	33.7	46	20	990	116	151	119
	23	29.190	29.282	29.365	29.279	34	35	28	36	41	31	36.0	43	31	170	126	119	132
	24	29.380	29.270	29.270	29.286	26	34	23.5	29	37	25.5	30.5	38	25	106	157	103	122
	25	29.393	29.453	29.559	29.468	16	20	15.5	18	24	18	20.0	26	16	967	962	959	963
	26	29.704	29.733	29.754	29.730	12	26	22	13	30	25	22.7	34	12	963	975	984	967
	27	29.853	29.814	29.715	29.794	18	34	28	20	38	30	29.3	38	18	976	992	130	999
	28	29.363	29.170	29.243	29.259	29	31	33	30	36	36	34.0	39	28	149	116	149	138
	29	29.380	29.333	29.480	29.398	25	34	28	28	38	30	32.0	38	27	100	144	130	125
	30	29.478	29.230	29.170	29.293	18	36	31	20	42.5	33	31.8	44	18	976	127	151	118
	31	28.830	29.833	29.184	28.949	36	40	4	39	49	43	43.7	53	32	173	130	208	170
Means....		29.463	29.415	29.481	29.453	....	....	....	27	37.8	30.6	31.8	....	....	120	135	136	130
April	1	29.372	29.294	29.340	29.302	36	43	35	38	50	37	41.7	50	37	186	186	178	183
	2	29.334	29.424	29.488	29.415	35	35	35	37	40	37	38.0	40	35	178	139	178	165
	3	29.462	29.384	29.398	29.415	36	45	38	37	49	41	42.3	51	35	199	247	190	212
	4	29.376	29.261	29.224	29.287	35	64.5	50	37	76	55	56.0	78	35	178	453	293	309
	5	29.267	29.439	29.560	29.422	57	50	41	62.5	58	45	55.2	65	44	392	255	305	284
	6	29.656	29.595	29.692	29.648	31	36	30	34	42	34	36.7	44	32	139	134	121	131
	7	29.700	29.587	29.590	29.626	28	37	29	30	42.5	31	34.5	42.5	29	130	149	137	139
	8	29.610	29.574	29.624	29.603	31	37	29	34	45	31	36.7	45	28	139	116	137	132
	9	29.698	29.669	29.639	29.669	23	40	31	24.5	50	35	36.5	55	22	106	117	198	117
	10	29.446	29.328	29.353	29.376	43	50	48	47	59	51	52.3	59	33	225	242	226	234
	11	29.403	29.347	29.370	29.373	36	54.5	43	39	64	47	50.0	64	37	173	239	225	222
	12	29.298	29.098	29.279	29.225	48	62	49	54	76.5	51	60.5	77	44	256	322	321	313
	13	29.597	29.587	29.480	29.555	38.5	49	39	41	57	41.5	46.5	58	39	204	242	206	217
	14	29.348	29.255	29.415	29.339	39	55	43	42	65	47	51.3	65	40	199	300	225	241
	15	29.615	29.530	29.535	29.560	39	49	40	43	57	43	47.7	57	40	186	242	208	212
	16	29.629	29.461	29.449	29.513	36	50	44	38	56	49	47.7	56	34	186	282	223	227
	17	29.505	29.474	29.495	29.491	49.5	55	51	52	64	54	56.7	64	44	321	314	335	323
	18	29.539	29.478	29.461	29.493	54	63	65	56	77	69	67.7	77	52	391	389	564	426
	19	29.474	29.403	29.364	29.414	58	64	54	60.5	69	56	61.8	72	56	449	529	391	456
	20	29.219	29.143	29.105	29.156	60	67	61	63	77	64	68.0	76	53	478	527	497	501
	21	29.075	29.025	29.033	29.049	59	56	57	63	70	59	64.0	72	59	447	263	439	383
	22	29.106	29.105	29.075	29.095	48	59	55	53	70	58	60.3	70	46	269	354	333	339
	23	28.851	28.839	28.986	28.892	40	39.5	41	44	45	43	47.3	57	42	195	171	211	199
	24	29.025	28.994	29.059	29.026	36	45	41	42	55	46	47.7	54	36	134	169	192	165
	25	29.067	29.058	29.214	29.113	33	42	40	40	53	44	45.7	56	39	997	123	195	132
	26	29.383	29.357	29.347	29.362	33	49	47	38	59	49	48.7	62	31	123	216	297	207
	27	29.376	29.225	29.156	29.252	46	51	47	48	60	51	53.0	59	32	284	255	320	290

the northern and northwestern lakes, at Monroe City, Michigan.

VAPOR.				WIND.										Amount of cloudiness.			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.	(0 = clear sky.) (10 = sky entirely overcast.)						
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.				
738	561	744	681	E.....	E.....	E.....	4	2	4	3.3	East.....	9	4	0				
820	667	805	764	E.....	E.....	W.....	2	4	25	9.7	West.....	4	10	5		.03		
792	459	594	615	W.NW.	W.....	W.....	12	35	25	24.0	N. 87 W.	0	1	0		.04		
738	574	803	705	NW.....	NW.....	NW.....	45	45	45	45.0	N. 45 W.	9	9	10				
692	524	761	659	NW.....	NW.....	NW.....	12	12	12	12.0	N. 45 W.	0	1	0				
692	463	617	591	SW.....	SW.....	SW.....	4	25	4	11.0	S. 45 W.	0	5	10				
761	510	663	645	N.....	NW.....	NW.....	25	25	35	26.3	N. 32 W.	3	5	0				
622	376	655	571	W.....	W.NW.	NW.....	12	25	4	13.0	N. 72 W.	0	3	0				
746	617	772	712	W.....	W.....	NW.....	4	4	4	37.0	N. 76 W.	10	8	0				
804	476	788	689	NW.....	W.....	NE.....	2	2	4	1.7	N. 9 W.	0	5	10		.05		
732	554	744	677	NE.....	E.....	E.....	4	12	2	5.4	N. 86 E.	10	10	10		.31		
792	500	802	698	SE.....	NW.....	NW.....	2	4	4	2.0	N. 45 W.	10	10	10		.19		
896	726	898	840	NE.....	NE.....	NE.....	4	4	25	11.0	N. 45 E.	10	10	10		.58		
898	910	900	903	NE.....	N.....	N.....	4	4	4	3.7	N. 11 E.	10	10	10		.30		
895	726	900	840	N.NE.	NE.....	W.SW.	4	2	12	2.7	N. 86 W.	10	9	10		.15		
782	794	570	715	W.....	W.SW.	W.SW.	4	45	45	31.3	S. 69 W.	8	10	2		.05		
816	692	582	697	W.....	W.....	W.....	12	25	4	13.7	West.....	4	4	0		.02		
855	628	703	729	W.SW.	W.....	W.....	25	35	12	23.7	S. 82 W.	10	5	10		.12		
880	712	754	782	NE.....	NE.....	NE.....	4	4	4	4.0	N. 45 E.	10	10	10		.32		
880	685	841	802	E.NE.	NE.....	NE.....	25	35	35	31.0	N. 51 E.	10	10	10		.40		
824	582	738	715	NE.....	NW.....	NW.....	25	25	4	13.0	N. 3 W.	10	4	1				
730	326	800	639	SW.....	SW.....	E.NE.	4	4	4	1.7	S. 13 W.	3	3	9		.14		
802	468	685	658	SW.....	W.....	W.....	2	35	12	16.0	S. 88 W.	10	5	10				
665	712	750	709	W.NW.	W.....	NW.....	4	12	25	13.0	N. 60 W.	7	10	5		.06		
682	483	603	589	NW.....	W.....	NW.....	25	35	35	29.7	N. 61 W.	10	5	5				
810	569	622	667	NW.....	NW.....	W.....	4	12	2	6.0	N. 49 W.	0	3	0				
702	343	782	609	N.....	NE.....	NE.....	2	25	35	20.7	N. 44 E.	0	5	9		.10		
890	550	705	715	NE.....	NE.....	S.....	35	4	12	10.3	N. 61 E.	10	10	9		.12		
655	628	782	683	NW.....	NW.....	NW.....	35	25	25	28.3	N. 45 W.	3	7	0				
702	466	800	656	W.....	SW.....	SE.....	4	4	4	2.3	S. 35 W.	0	5	10				
726	373	750	616	SE.....	SW.....	SE.....	4	60	12	24.0	S. 42 W.	10	4	9		.08		
777	573	739	696							25.3	N. 57 W.	6.1	6.4	5.9		3.06		
811	515	807	711	N.....	NE.....	E.....	4	25	4	10.4	N. 45 E.	3	1	9				
807	557	807	724	NE.....	NE.....	E.....	45	25	25	29.7	N. 57 E.	10	10	10		.02		
903	710	738	784	NE.....	NE.....	E.....	12	12	4	9.0	N. 51 E.	2	3	3		.12		
807	505	681	681	SE.....	S.....	SW.....	2	2	2	1.6	South.....	0	3	0				
694	529	684	636	SW.....	SW.....	W.SW.	4	45	35	27.3	S. 54 W.	9	2	10				
712	530	617	610	W.....	W.NW.	NW.....	4	25	4	10.7	N. 67 W.	9	4	10				
782	545	788	705	NW.....	NW.....	NW.....	12	12	4	9.3	N. 45 W.	9	7	10				
712	386	778	629	N.....	N.....	NW.....	4	4	4	3.7	N. 15 W.	1	5	0				
807	322	628	586	N.....	NE.....	NE.....	2	12	2	5.0	N. 41 E.	0	1	1				
698	484	790	657	E.....	E.SE.	SW.....	4	12	4	4.7	S. 59 E.	2	5	9				
726	502	698	642	W.....	E.....	E.....	2	12	2	4.0	East.....	0	1	0				
613	328	859	623	E.....	S.....	W.....	35	35	35	11.7	South.....	2	4	4				
721	521	784	695	N.....	NE.....	E.....	2	12	4	5.3	N. 49 E.	0	2	0		.20		
744	487	698	643	W.....	SW.....	N.....	12	35	4	14.0	S. 61 W.	9	4	1				
669	521	750	617	NE.....	E.....	NE.....	4	4	4	3.7	N. 61 E.	3	1	1				
811	627	638	632	NE.....	NE.....	E.....	4	25	4	10.7	N. 50 E.	3	0	0				
827	527	802	719	E.....	E.NE.	SE.....	12	25	4	12.7	N. 80 E.	3	3	5				
872	419	796	696	SE.....	S.....	SE.....	2	2	2	2.0	S. 13 E.	7	5	10				
852	747	872	824	SE.....	SE.....	NE.....	2	12	25	9.3	N. 75 E.	2	5	7		.42		
831	569	833	744	SE.....	S.....	S.....	2	4	2	2.3	S. 17 E.	10	9	0				
776	350	878	671	S.SW.	SW.....	W.....	12	45	2	19.0	S. 42 W.	1	5	0		.14		
667	482	816	655	NW.....	NW.....	N.....	4	2	4	3.0	N. 27 W.	0	0	7				
677	571	833	694	NE.....	NE.....	N.....	35	25	2	20.3	N. 43 E.	0	8	5				
500	388	617	502	NW.....	NW.....	W.....	45	35	45	38.7	N. 61 W.	1	5	5				
393	306	677	459	NW.....	NW.....	NW.....	45	35	25	35.0	N. 45 W.	2	1	0				
537	432	853	607	W.....	W.....	SW.....	25	4	2	10.0	S. 87 W.	0	0	0				
850	493	722	688	NE.....	NE.....	NE.....	4	45	25	24.7	N. 45 E.	5	3	5				
765	281	802	616	S.....	SW.....	W.....	4	60	4	22.0	S. 45 W.	6	4	0				
508	220	653	490	W.....	W.....	NE.....	25	45	12	20.7	N. 82 W.	2	1	1				
824	399	850	691	NE.....	NE.....	NE.....	2	25	12	13.0	N. 45 E.	3	7	10				
735	377	758	657							3.0	N. 27 W.	3.8	3.6	4.1		.80		



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					°	°	°	°	°	°	°	°	°					
May	1	28.982	28.859	29.132	28.991	42	40	34	44	44	37	41.7	47	36	241.	195.	157.	
	2	29.276	29.411	29.352	29.346	35	42	42	37	52	45	44.7	53	33	172.	136.	127.	
	3	29.451	29.397	29.345	29.398	32	44	43	35	56	45	45.3	56	29	142.	131.	125.	
	4	29.316	29.270	29.252	29.279	42	53	50	48	63	53	54.7	64	34	189.	270.	321.	
	5	29.278	29.282	29.332	29.297	43	52	50	45	63	54	54.0	64	36	251.	243.	327.	
	6	29.507	29.467	29.520	29.498	44	53	46	48	63.5	49	53.5	63	39	236.	264.	351.	
	7	29.675	29.566	29.517	29.566	45	56	53	50	69	55	58.0	69	36	234.	278.	372.	
	8	29.380	29.151	29.091	29.207	50	51	50	53	59	53	55.0	62	44	321.	249.	271.	
	9	29.240	29.302	29.277	29.273	48	58	56	50	68	59	59.0	68	46	309.	350.	408.	
	10	29.337	29.253	29.241	29.277	46	62	57	50	72	59	62.3	72	44	258.	312.	433.	
	11	29.275	29.238	29.248	29.254	51	64	62	55	76	65	65.3	77	45	321.	438.	513.	
	12	29.283	29.208	29.233	29.241	56.5	64	61	58	79	65	67.3	80	49	444.	396.	471.	
	13	29.265	29.312	29.392	29.322	41	49	48	42	56	51	49.7	63	41	244.	255.	285.	
	14	29.516	29.450	29.447	29.471	38	55	49	41	61	51	51.0	62	35	190.	354.	321.	
	15	29.331	29.142	29.153	29.209	40	59	62	44	74	66	61.3	76	40	195.	300.	502.	
	16	29.186	29.297	29.375	29.286	44	40	39	46	46	41	44.3	66	41	262.	169.	219.	
	17	29.387	29.276	29.243	29.302	39.5	53	49	41	63	51	51.7	64	31	223.	273.	321.	
	18	29.181	29.077	29.112	29.123	51	68	65	54	84	68	68.7	85	48	335.	470.	577.	
	19	29.214	29.191	29.155	29.187	58	68	62	61	82	64	69.0	83	47	443.	497.	538.	
	20	29.110	29.152	29.273	29.178	67	61	61	74	79	64	72.3	80	59	562.	296.	497.	
	21	29.307	29.332	29.377	29.339	49	50	48	53	62	50	55.0	64	48	295.	302.	308.	
	22	29.521	29.420	29.434	29.458	38	50	49	42	62	51	51.7	66	35	177.	202.	321.	
	23	29.541	29.487	29.450	29.493	41	51	56	45	67	59	57.0	67	35	205.	163.	428.	
	24	29.530	29.443	29.361	29.445	45	59	61	49	76	65	63.3	77	34	247.	274.	453.	
	25	29.252	29.122	29.111	29.162	47	63	57	54	82	62	66.0	84	46	231.	322.	389.	
	26	29.071	28.998	28.881	28.983	54	58	54	57	69	60	62.0	73	47	372.	336.	338.	
	27	28.610	28.600	28.801	28.670	54	57	47	56	62	49	55.7	62	48	391.	289.	297.	
	28	29.064	29.091	29.071	29.075	47	53	51	50	63	53.5	55.5	63	46	283.	270.	344.	
	29	29.061	29.118	29.182	29.120	44	51	48	45	57	50	50.7	60	44	275.	295.	308.	
	30	29.189	29.116	29.156	29.154	48	61	61	50	73	67	63.3	75	41	309.	356.	452.	
	31	29.411	29.440	29.434	29.428	56	54	56	59	65	59	61.0	69	47	409.	252.	408.	
Means....		29.280	29.241	29.256	29.259	....	....	....	50.2	66.2	55.8	57.1	....	....	314.	291.	357.	
June	1	29.470	29.449	29.444	29.454	53	59	58	56	69	61	62.0	70	54	363.	367.	442.	
	2	29.370	29.256	29.208	29.278	59	60	62	63	70	65	66.0	76	49	447.	385.	512.	
	3	29.085	29.020	29.023	29.043	62	63	62	67	69	65	67.0	70	60	489.	495.	516.	
	4	28.980	29.022	29.095	29.032	63	65	64	66	76	67	69.7	76	59	536.	470.	559.	
	5	29.170	29.082	29.037	29.096	63	69	62	79	66	63	66.0	81	63	362.	...	388.	
	6	29.076	29.061	29.071	29.069	57	52	55	61	61	60	60.7	66	57	412.	369.	388.	
	7	29.236	29.258	29.218	29.237	60	68	65	61	76	70	69.0	76	69	545.	577.	532.	
	8	29.258	29.203	29.173	29.211	64	71	65	67	81	69	72.3	83	61	558.	624.	562.	
	9	29.278	29.330	29.383	29.330	67	73	64	70	83	67	73.3	83	65	622.	677.	532.	
	10	29.584	29.585	29.606	29.592	58	69	64	60	80	69	69.7	83	55	456.	561.	532.	
	11	29.656	29.584	29.556	29.589	54	63	61	58	73	64	65.0	74	49	305.	442.	499.	
	12	29.436	29.314	29.230	29.327	61	74	74	67	91	78	78.7	92	61	559.	610.	722.	
	13	29.160	29.172	29.162	29.165	73	72	70	77	89	79	81.7	87	71	757.	553.	622.	
	14	29.273	29.247	29.240	29.253	64	64	61	67	79	69	71.7	80	65	555.	296.	422.	
	15	29.223	29.215	29.203	29.214	55	63	60	60	76	67	69.7	77	58	300.	402.	422.	
	16	29.196	29.196	29.224	29.205	55	60	58	59	70	61	61.3	70	55	389.	385.	422.	
	17	29.197	29.131	29.103	29.141	56	57	55	59	63	57	59.7	60	51	402.	286.	422.	
	18	28.849	28.879	29.059	28.929	48	52	50	50	55	53	52.7	56	42	309.	289.	322.	
	19	29.270	29.313	29.398	29.337	51	63	60	55	74	64	64.3	77	49	321.	439.	462.	
	20	29.367	29.383	29.431	29.394	47	73	65	50	83	71	68.0	85	42	283.	677.	522.	
	21	29.343	29.235	29.230	29.269	63	73	64	69	82	69	75.3	88	64	425.	608.	532.	
	22	29.308	29.298	29.292	29.301	64	70	62	67	85	71	74.3	86	62	536.	531.	622.	
	23	29.291	29.273	29.283	29.282	63	72	67	65	75	71	70.3	80	61	549.	744.	622.	
	24	29.368	29.357	29.384	29.370	70	79	78	73	94	84	83.7	94	65	613.	787.	572.	
	25	29.420	29.477	29.462	29.453	69	73	74	72	83	77	77.3	94	70	628.	677.	722.	
	26	29.378	29.336	29.322	29.345	67	72	76	71	90	82	81.0	93	69	608.	726.	622.	
	27	29.340	29.332	29.343	29.338	64	65	61	62	79	66	71.0	80	66	543.	441.	472.	
	28	29.438	29.494	29.514	29.482	47	55	56	59	65	58	60.7	66	47	165.	280.	226.	
	29	29.490	29.448	29.454	29.464	51	65	61	54	75	64	64.3	77	47	335.	453.	427.	
	30	29.472	29.488	29.548	29.503	57	66	67	60	80	71	70.3	82	47	426.	452.	622.	
Means...		29.299	29.282	29.290	29.290	....	....	....	63.9	76.3	67.7	69.3	....	....	468.	512.	540.	

the northern and northwestern lakes, at Monroe City, Michigan.

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
236	677	712	742	N.	E.	E.	35	4	4	15.0	N. 53 E.	10	10	10		.13
807	350	762	640	N.	NW	NW	4	25	2	10.0	N. 40 W.	0	3	1		.26
698	292	840	610	N.	W.	W.	2	4	2	2.3	N. 73 W.	7	8	0		
563	470	798	610	W.	S. SW	S. SW	4	12	2	5.3	S. 38 W.	0	3	1		
840	422	738	667	SW	S. SW	W.	2	2	4	2.3	S. 63 W.	8	8	10		
704	451	781	645	NW	NE	N.	2	2	2	1.6	North	2	7	1		.16
646	391	869	635	N.	NE	NE	2	2	2	1.7	N. 31 E.	0	3	1		
798	537	798	711	E.	E.	N.	2	35	2	12.7	N. 87 E.	7	10	10		
856	511	819	729	NW	S. SW	SW	2	2	2	1.3	S. 64 W.	10	5	0		
716	357	878	650	S.	S.	SE	2	12	2	5.3	S. 5 E.	4	5	0		
743	486	836	655	SE	SE	SE	2	2	2	2.0	S. 45 E.	0	0	0		
936	400	783	706	S.	S.	SE	2	2	12	5.0	S. 33 E.	6	9	10		
914	569	790	758	NW	NW	N.	12	45	2	19.3	N. 43 W.	10	6	3		1.62
738	659	859	725	NW	NE	NE	12	25	25	17.0	N. 31 E.	0	3	1		
677	358	786	607	S. SW	W.	W.	25	45	2	20.3	S. 67 W.	1	5	10		
843	543	824	737	N.	NE	NE	4	25	12	13.7	N. 41 E.	10	10	0		.68
867	470	859	732	NE	NE	E.	2	12	25	12.0	N. 74 E.	0	1	3		
802	403	843	683	W.	S.	W.	2	4	2	2.0	S. 45 W.	1	4	5		
825	455	888	723	SW	SE	NE	2	35	4	11.7	S. 49 E.	4	1	0		
677	300	833	603	SE	SW	W.	2	60	2	20.7	N. 45 W.	0	5	0		
733	364	856	651	NW	NW	N.	2	60	2	21.0	N. 44 W.	7	4	0		
661	364	859	628	NW	NW	NE	12	25	25	14.7	N. 11 W.	0	1	6		
681	246	819	583	NW	W.	W. NW	4	4	25	10.7	N. 67 W.	0	5	1		
710	305	783	599	SW	S. SW	SW	2	12	4	6.0	S. 29 W.	0	3	0		
552	295	718	522	W.	SW	N.	2	12	2	4.0	S. 57 W.	0	0	0		
812	475	653	647	NE	NE	NE	12	35	60	35.7	N. 45 E.	5	6	10		
872	718	853	814	NE	NE	NW	12	4	35	13.0	N. 20 W.	10	10	10		.48
786	470	832	696	W.	W.	SE	35	35	4	22.3	S. 88 W.	9	5	10		.25
920	634	856	803	NW	W. NW	W.	2	25	2	9.7	N. 66 W.	7	8	4		.25
856	461	690	670	SW	SW	W.	4	45	12	19.3	S. 54 W.	5	5	10		.15
819	441	819	693	NE	NE	NE	4	4	2	3.3	N. 45 E.	0	0	1		
771	448	807	675							2.9	N. 36 W.	4.1	8.5	3.9		3.39
809	518	825	717	NE	NE	NE	4	4	2	3.3	N. 45 E.	9	5	10		
776	525	836	712	SE	NE	NE	2	35	4	13.0	N. 47 E.	0	5	7		
740	700	836	759	NE	NE	NE	25	45	12	27.1	N. 45 E.	6	5	10		
838	524	841	734	E.	SE	SW	4	2	2	1.7	S. 56 E.	10	6	3		.14
366		912	654	SW	W. SW	SW	2	35	25	20.3	S. 58 W.	10	7	10		.39
769	502	708	660	SW	SW	W. SW	12	35	35	2.7	S. 55 W.	1	10	10		.42
941	644	751	779	W.	W.	SW	12	12	2	2.1	S. 87 W.	10	5	5		.68
841	590	796	742	NW	NE	E. NE	2	25	4	9.7	N. 45 E.	5	6	2		
848	600	841	763	S.	S.	S. SW	2	2	2	2.0	S. 8 W.	9	3	1		.04
880	548	747	725	SW	S.	SE	2	4	4	3.0	S. 9 E.	2	1	1		
756	545	833	711	E.	E.	NE	12	12	4	9.0	N. 84 E.	1	4	1		
847	419	819	693	S.	S.	SW	2	12	4	5.7	S. 9 W.	3	7	6		.06
817	407	618	614	SW	S. SW	S.	2	4	2	2.7	S. 27 W.	5	2	1		.04
841	400	607	616	SW	SW	W.	2	35	4	13.0	S. 47 W.	7	3	0		
487	448	642	526	NW	NW	NW	25	25	2	17.1	N. 45 W.	0	5	1		
761	525	825	704	W. NW	W.	NW	4	4	2	3.3	N. 73 W.	0	8	2		
819	670	874	788	N.	NW	NW	2	4	12	6.0	N. 40 W.	8	10	10		.04
856	805	798	820	NW	NW	NW	60	35	60	51.7	N. 45 W.	10	10	7		1.86
743	511	780	678	NW	W.	SW	12	12	2	7.7	N. 71 W.	2	5	0		.45
786	600	708	698	S. SW	S.	SE	2	4	4	3.0	S. 13 E.	0	0	0		
700	460	747	636	S.	S. SW	SW	2	25	2	9.7	S. 24 W.	1	5	5		
841	442	850	711	W.	S. SW	SE	2	4	2	2.0	S. 20 W.	2	1	1		.27
890	858	802	850	NE	N.	N. NE	35	35	4	23.0	N. 23 E.	8	10	5		
854	493	753	700	SE	S.	SW	2	2	2	1.6	South	5	3	0		.37
832	600	862	771	SW	W.	SW	2	4	2	2.3	S. 66 W.	0	8	9		
802	565	747	705	SW	W.	W.	2	2	4	2.7	S. 80 W.	5	8	5		.05
793	434	735	654	SW	NW	NE	25	12	25	4.0	N. 45 W.	5	4	3		
390	487	421	414	NE	NW	NW	12	12	2	6.3	N. 5 W.	0	5	1		.06
802	558	833	731	W.	SE	NE	2	25	4	7.7	S. 52 E.	5	7	5		
822	441	802	628	SW	SE	NE	4	4	2	1.7	S. 13 E.	3	8	5		.24
773	545	773	698							2.9	N. 53 W.	4.4	5.5	4.4		4.51



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1865.					°	°	°	°	°	°	°	°	°					
July	1	29.278	29.177	29.173	29.208	64	71	61	66	80	65	70.3	82	65	569.	637.	423.	522.
	2	29.286	29.328	29.311	29.308	60	65	61	62	70	65	65.7	72	61	491.	550.	423.	524.
	3	29.326	29.340	29.320	29.349	58	66	70	62	75	75	70.7	79	58	429.	519.	728.	544.
	4	29.405	29.350	29.310	29.355	66	72	72	70	72	77	75.0	83	68	526.	704.	712.	660.
	5	29.413	29.455	29.445	29.438	66	70	64	69	75	68	70.7	72	68	599.	625.	543.	611.
	6	29.428	29.321	29.324	29.358	67	77	78	70	89	85	81.3	90	65	622.	765.	722.	714.
	7	29.314	29.314	29.347	29.325	75	80	72	81	88	76	81.7	88	71	727.	915.	711.	611.
	8	29.400	29.300	29.313	29.338	68	71	68	70	77	72	72.0	79	68	652.	678.	631.	621.
	9	29.400	29.408	29.385	29.398	64	69	61	68	74	69	70.3	74	67	543.	641.	522.	571.
	10	29.326	29.267	29.181	29.258	60	67	62	64	71	66	67.0	72	62	451.	611.	522.	522.
	11	29.223	29.225	29.205	29.218	60	66	65	64	72	69	68.3	73	62	451.	522.	522.	522.
	12	29.228	29.253	29.198	29.226	57	59	70	60	79	74	71.0	79	58	426.	574.	679.	544.
	13	29.396	29.456	29.426	29.423	54	60	57	58	65	60	61.0	75	56	365.	451.	426.	424.
	14	29.456	29.411	29.388	29.418	54	65	60	58	71	64	64.3	72	55	365.	537.	543.	492.
	15	29.341	29.336	29.276	29.318	55	61	60	60	66	62	62.7	68	58	367.	470.	522.	452.
	16	29.189	29.186	29.168	29.181	56	60	59	59	64	62	61.7	64	57	409.	465.	461.	445.
	17	29.188	29.321	29.293	29.267	60	66	62	64	72	66	68.7	72	61	465.	559.	522.	522.
	18	29.304	29.278	29.212	29.267	56	67	65	60	77	70	69.0	77	58	396.	527.	522.	492.
	19	29.036	28.928	29.048	29.005	56	65	65	60	70	68	66.0	73	60	396.	550.	577.	522.
	20	29.216	29.285	29.293	29.265	62	70	70	65	75	73	71.0	75	62	516.	616.	622.	622.
	21	29.365	29.320	29.228	29.304	65	73	68	69	74	72	71.7	77	67	564.	712.	631.	622.
	22	29.418	29.420	29.458	29.452	64	64	65	67	68	68	67.7	72	66	556.	543.	577.	522.
	23	29.193	29.468	29.405	29.355	63	68	66	67	72	70	69.7	72	64	522.	631.	522.	522.
	24	29.387	29.371	29.317	29.358	62	71	70	65	76	72	71.0	77	65	516.	691.	706.	622.
	25	29.113	29.100	29.216	29.143	72	73	68	75	78	71	74.7	79	70	744.	744.	644.	712.
	26	29.291	29.325	29.300	29.305	64	72	70	67	78	73	72.7	80	64	556.	704.	683.	651.
	27	29.241	29.210	29.190	29.214	65	74	73	68	80	77	75.0	80	67	577.	752.	757.	622.
	28	29.258	29.219	29.215	29.231	71	76	63	74	81	71	75.3	80	71	718.	829.	644.	722.
	29	29.325	29.400	29.395	29.373	66	70	64	68	75	68	70.3	75	68	612.	666.	543.	622.
	30	29.538	29.578	29.548	29.555	57	63	61	60	68	64	64.0	70	58	426.	509.	497.	477.
	31	29.607	29.578	29.535	29.573	50	69	67	54	74	70	66.0	74	50	308.	641.	622.	524.
Means....		29.320	29.322	29.304	29.315	.....	.....	.....	65.3	74.6	69.7	69.5	.....	.....	515.	631.	591.	572.
August	1	29.581	29.520	29.512	29.538	65	71	74	68	79	78	75.0	82	66	577.	651.	765.	671.
	2	29.558	29.552	29.534	29.548	71	78	73	74	82	79	75.0	83	71	718.	904.	730.	724.
	3	29.552	29.499	29.466	29.506	72	77	74	75	83	77	78.3	84	72	744.	846.	722.	726.
	4	29.492	29.458	29.372	29.441	73	75	71	77	81	75	77.7	82	72	757.	727.	704.	749.
	5	29.510	29.500	29.435	29.482	70	72	71	72	78	75	75.0	79	70	706.	704.	704.	705.
	6	29.212	29.102	29.070	29.128	72	75	70	75	80	73	76.0	82	70	744.	800.	622.	746.
	7	29.228	29.277	29.263	29.256	63	68	64	67	74	68	69.7	75	64	522.	601.	543.	526.
	8	29.396	29.498	29.378	29.424	59	68	66	62	72	70	68.0	74	60	460.	631.	522.	522.
	9	29.418	29.350	29.222	29.330	67	75	73	69	80	76	75.0	80	63	635.	800.	771.	735.
	10	29.098	29.132	29.165	29.132	71	73	71	73	78	75	75.3	78	70	731.	744.	704.	722.
	11	29.298	29.311	29.298	29.302	64	61	60	67	65	63	65.0	76	61	556.	483.	472.	506.
	12	29.366	29.371	29.366	29.368	58	62	60	60	68	63	63.7	62	57	456.	476.	472.	457.
	13	29.428	29.391	29.366	29.395	54	63	63	57	71	67	65.0	72	52	378.	462.	422.	426.
	14	29.378	29.467	29.315	29.387	62	71	67	65	77	70	70.7	77	62	516.	672.	622.	626.
	15	29.341	29.335	29.300	29.325	60	72	67	63	80	71	71.3	80	62	478.	677.	608.	522.
	16	29.288	29.348	29.318	29.318	66	66	64	69	69	67	68.3	73	64	509.	529.	566.	526.
	17	29.398	29.383	29.376	29.386	59	65	61	62	72	64	66.0	72	58	460.	524.	497.	494.
	18	29.404	29.348	29.341	29.364	65	70	66	67	75	69	70.3	75	54	591.	666.	522.	612.
	19	29.364	29.365	29.318	29.349	54	71	67	57	77	70	68.0	78	55	378.	672.	622.	522.
	20	29.353	29.292	29.230	29.292	61	74	70	64	79	74	72.3	80	62	497.	772.	672.	622.
	21	29.173	29.162	29.195	29.177	66	74	65	67	78	68	71.0	72	65	626.	785.	577.	622.
	22	29.096	29.196	29.254	29.182	58	62	60	60	65	63	62.7	68	59	456.	516.	472.	422.
	23	29.346	29.336	29.424	29.369	57	62	59	60	67	61	62.7	68	59	426.	429.	472.	462.
	24	29.537	29.558	29.526	29.540	51	60	56	53	67	59	59.7	52	68	342.	425.	422.	394.
	25	29.587	29.556	29.526	29.557	48	68	61	50	72	65	62.3	72	48	309.	611.	483.	474.
	26	29.569	29.485	29.445	29.496	55	70	69	57	77	72	68.7	77	55	407.	619.	644.	562.
	27	29.441	29.443	29.411	29.432	62	67	64	66	72	68	68.7	73	64	502.	5		

the northern and northwestern lakes, at Cleveland, Ohio.

VAPOR.				WIND.										Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.							
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.		
791	.623	.783	.766	S.....	S.....	W.....	4	12	4	5.7	S. 14 W.	5	4	5	.173			
774	.751	.783	.806	W.....	W.....	SW.....	12	12	2	11.0	S. 76 W.	10	3	0	.118	.45		
772	.599	.768	.713	S.....	S. SW	S.....	4	12	4	6.7	S. 13 W.	3	3	4	.180			
799	.734	.774	.769	S.....	W.....	Calm..	4	2	0	1.5	S. 27 W.	9	5	6	.138			
746	.768	.793	.802	NW.....	NE.....	NE.....	2	12	2	4.7	N. 37 E.	8	6	4	.164	.33		
748	.560	.718	.709	SE.....	W.....	S.....	4	12	2	3.7	S. 64 W.	0	3	3	.239			
744	.691	.815	.750	W. SW.	W. by N	S.....	4	12	2	5.0	S. 86 W.	0	2	6	.201			
798	.731	.804	.811	NE.....	NE.....	NE.....	2	4	12	6.0	N. 45 E.	10	7	10	.138	.13		
793	.764	.747	.768	N. NE.	N. NE.	NE.....	4	4	2	3.3	N. 27 E.	1	5	10	.155			
731	.802	.786	.773	E. SE.	E.....	E.....	4	2	2	2.7	S. 79 E.	10	10	10	.128	.02		
731	.712	.796	.746	NE.....	N. NE.	Calm..	12	12	0	8.0	N. 35 E.	4	3	2	.167	.42		
822	.580	.810	.737	E. SE.	W.....	N.....	2	2	25	8.0	N. 1 W.	0	0	10	.204			
756	.731	.822	.770	N.....	N. NW.	SE.....	12	2	2	4.0	N. 3 E.	6	5	3	.113			
756	.708	.793	.752	SW.....	NE.....	S.....	4	2	2	1.3	S. 21 W.	4	3	2	.180			
708	.735	.888	.777	S.....	SW.....	NE.....	2	2	2	0.7	South ..	10	10	10	.036			
819	.780	.828	.809	NE.....	NE.....	NE.....	2	4	25	10.3	N. 45 E.	10	10	5	.046	.32		
780	.712	.786	.759	NE.....	W. NW.	S.....	12	2	2	3.0	N. 49 E.	0	0	0	.187			
765	.569	.751	.695	SW.....	W.....	S.....	4	2	2	2.3	S. 45 W.	0	3	0	.132			
765	.751	.843	.786	SE.....	SW.....	W.....	4	2	12	3.8	S. 68 W.	10	10	10	.073	.85		
836	.768	.854	.819	SW.....	SW.....	Calm..	2	2	0	1.3	S. 45 W.	0	8	0	.026	.25		
796	.951	.804	.850	S.....	N.....	S.....	2	2	2	0.7	South ..	10	7	10	.077			
841	.793	.843	.826	N.....	NE.....	Calm..	4	2	0	1.9	N. 15 E.	10	7	10	.091	.21		
790	.804	.799	.798	N. NE.	N.....	S.....	2	2	2	0.7	N. 25 E.	7	0	0	.174			
836	.771	.900	.836	SE.....	SE.....	SE.....	2	4	2	2.7	S. 45 E.	10	7	3	.099	.01		
858	.776	.850	.828	S.....	SW.....	W. NW.	12	25	35	17.7	S. 72 W.	10	6	2	.124			
841	.734	.851	.810	W.....	W. by N	S.....	12	2	2	4.7	S. 87 W.	0	3	4	.122	.04		
843	.741	.817	.800	S. SE.	W.....	S.....	4	12	2	4.0	S. 65 W.	10	5	1	.095	.17		
856	.784	.850	.830	W.....	N. NE.	NE.....	2	2	2	1.0	N. 4 E.	7	8	10	.177			
895	.768	.793	.819	N.....	NW.....	SE.....	12	2	2	4.0	North ..	5	0	6	.160	.45		
822	.743	.833	.799	E. NE.	NW.....	SE.....	2	2	2	0.7	N. 75 E.	0	0	0	.158			
738	.764	.848	.783	E.....	NE.....	SE.....	2	2	2	1.6	East....	0	0	0	.146			
808	.732	.811	.784	.....	.....	.....	.....	.....	.....	0.9	N. 64 W.	5.4	4.6	4.7	4.281	3.63		
813	.657	.819	.773	S.....	NW.....	Calm..	4	2	0	1.0	S. 28 W.	6	3	6	.149			
856	.828	.738	.807	S.....	N.....	S.....	4	2	2	0.7	South ..	7	6	3	.125	.01		
858	.750	.862	.823	S.....	S.....	S.....	2	4	4	3.3	South ..	5	6	5	.138			
817	.744	.812	.791	S.....	NW.....	N.....	2	2	2	0.7	N. 45 W.	3	10	7	.111	.21		
900	.734	.812	.815	NW.....	N.....	SE.....	12	2	2	3.9	N. 38 W.	10	3	3	.131			
858	.782	.854	.831	S.....	W. SW.	W.....	12	25	35	20.7	S. 70 W.	10	7	5	.120			
790	.720	.793	.768	W. NW.	W.....	SE.....	25	4	2	8.3	N. 74 W.	4	0	0	.154	.02		
828	.804	.799	.810	S.....	.....	SE.....	4	.....	2	2.5	S. 23 E.	0	.....	0	.064			
898	.782	.860	.847	S. SE.	N.....	S.....	2	2	2	0.7	S. 25 E.	6	7	10	.284			
902	.776	.812	.830	SW.....	W.....	W.....	12	12	2	8.0	S. 69 W.	8	0	7	.....	.36		
841	.783	.831	.818	N.....	N.....	N.....	12	4	4	6.7	North ..	10	10	0	.047	.16		
880	.695	.831	.802	E.....	N. NE.	S.....	2	4	2	1.3	N. 65 E.	10	5	0	.105			
812	.618	.790	.740	S.....	N.....	SE.....	2	2	2	0.7	S. 45 E.	3	5	6	.136			
836	.731	.818	.805	SE.....	N.....	SE.....	2	2	2	1.0	S. 74 E.	7	0	0	.093			
831	.661	.802	.765	SE.....	N. NW.	SE.....	2	4	2	0.5	N. 55 E.	5	0	0	.069			
846	.846	.841	.844	NE.....	N.....	N.....	4	4	12	6.3	N. 8 E.	10	10	10	.207			
828	.668	.833	.776	NE.....	NE.....	Calm..	4	12	0	5.3	N. 45 E.	0	0	0	.154			
893	.768	.846	.836	Calm..	N.....	S.....	0	2	2	.....	.....	0	0	0	.042			
812	.731	.848	.797	W.....	NW.....	S.....	2	2	2	1.0	S. 81 W.	5	4	0	.234			
833	.779	.810	.807	SW.....	W.....	Calm..	4	4	0	2.5	S. 77 W.	6	9	0	.104			
846	.819	.843	.869	SW.....	N.....	NE.....	12	4	12	1.3	North ..	8	3	10	.098			
880	.836	.831	.849	NE.....	NE.....	N.....	4	25	25	16.7	N. 24 E.	10	7	4	.102	.33		
822	.740	.882	.815	N.....	N.....	N.....	4	12	12	9.3	North ..	6	9	6	.119	.29		
864	.642	.819	.775	S.....	NW.....	S.....	2	2	2	1.0	S. 28 W.	3	2	0	.115			
856	.804	.783	.814	SE.....	NW.....	S.....	2	2	2	0.7	South ..	0	0	0	.120			
874	.889	.850	.804	SE.....	NW.....	S.....	2	2	2	0.7	South ..	0	0	0	.129			
786	.758	.793	.779	N.....	N.....	NE.....	2	2	4	2.5	N. 23 E.	4	3	0	.141			
756	.751	.841	.783	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.037			
831	.852	.852	.845	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.018			
900	.782	.817	.833	S.....	N. NE.	SE.....	4	4	2	1.1	S. 59 E.	0	2	0	.124	.69		
854	.714	.779	.782	S. SE.	NW.....	S.....	4	4	2	1.1	S. 24 W.	0	6	4	.....			
849	.749	.823	.807	.....	.....	.....	.....	.....	.....	1.3	N. 42 W.	5.2	4.2	2.9	3.280	1.47		

Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in inches and decimals.				
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1865.					°	°	°	°	°	°	°	°	°					
Sept. 1	29.320	29.348	29.320	29.333	67	69	71	70	72	73	71.7	80	70	622	662	731	717	
2	29.283	29.230	29.225	29.246	70	75	72	72	77	75	74.7	77	71	706	841	774	741	
3	29.300	29.277	29.300	29.292	70	75	73	72	78	76	75.3	79	72	706	827	771	746	
4	29.362	29.327	29.287	29.325	74	75	74	75	80	78	77.7	81	70	826	800	784	744	
5	29.322	29.324	29.272	29.306	73	75	72	76	80	74	76.7	81	74	771	800	757	741	
6	29.465	29.268	29.265	29.333	66	69	66	67	73	69	69.7	75	65	626	655	584	621	
7	29.291	29.265	29.223	29.260	63	71	70	65	75	72	70.7	75	62	549	704	736	628	
8	29.057	29.114	29.190	29.120	70	74	74	72	80	77	76.3	82	72	706	758	778	712	
9	29.315	29.322	29.347	29.324	73	76	75	75	82	78	78.3	82	74	784	816	825	774	
10	29.370	29.341	29.289	29.333	75	77	76	77	84	80	80.3	85	73	841	832	744	729	
11	29.270	29.300	29.325	29.298	75	71	67	78	75	69	74.0	82	69	827	704	622	616	
12	29.391	29.395	29.370	29.385	65	74	69	67	78	72	72.3	78	60	591	785	688	621	
13	29.483	29.469	29.482	29.478	69	79	76	72	86	80	79.3	86	69	662	825	843	747	
14	29.510	29.454	29.442	29.469	73	79	70	77	84	73	78.0	86	69	757	922	690	621	
15	29.590	29.603	29.593	29.595	67	67	61	70	73	64	69.0	78	61	622	581	497	541	
16	29.618	29.560	29.463	29.547	56	70	67	58	80	70	69.3	80	57	422	528	622	541	
17	29.365	29.259	29.222	29.282	67	78	69	70	85	71	75.3	85	66	622	863	682	611	
18	29.293	29.456	29.502	29.417	60	55	56	62	58	58	59.3	71	55	491	383	422	441	
19	29.610	29.608	29.586	29.601	50	60	57	51	64	60	58.3	64	50	348	465	436	411	
20	29.582	29.503	29.497	29.527	50	67	61	52	72	64	62.7	72	50	334	525	457	451	
21	29.521	29.511	29.473	29.502	58	70	68	60	75	70	68.3	76	58	456	686	658	633	
22	29.520	29.532	29.510	29.521	65	63	68	68	77	70	71.7	78	67	577	389	624	541	
23	29.573	29.528	29.383	29.495	62	70	68	65	75	72	70.7	76	63	516	666	631	611	
24	29.448	29.388	29.345	29.394	70	72	66	72	76	68	72.0	76	67	706	731	612	611	
25	29.373	29.433	29.401	29.402	69	67	63	71	71	65	69.0	72	65	622	608	549	611	
26	29.504	29.504	29.556	29.521	57	62	56	58	65	59	60.7	67	56	452	516	409	451	
27	29.614	29.593	29.576	29.594	50	62	62	53	75	65	64.3	75	50	321	591	516	451	
28	29.504	29.558	29.541	29.534	56	69	65	59	79	68	68.7	79	56	409	574	577	521	
29	29.493	29.405	29.338	29.412	58	71	66	60	79	69	69.3	80	57	456	651	528	521	
30	29.331	29.288	29.266	29.295	59	59	57	61	66	59	62.0	71	59	473	407	439	441	
Means....	29.422	29.405	29.386	29.404	.....	.....	.....	66.8	75.8	69.9	70.8	.....	.....	595	677	629	621	
October 1	29.236	29.141	29.116	29.164	51	61	60	55	70	63	62.7	70	52	321	416	478	411	
2	29.212	29.232	29.250	29.231	52	55	52	55	60	56	57.0	66	53	349	367	335	341	
3	29.245	29.222	29.247	29.238	50	49	49	52	55	51	52.7	56	48	334	269	321	301	
4	29.273	29.297	29.300	29.290	47	51	51	49	54	53	52.0	56	47	297	335	348	327	
5	29.390	29.422	29.507	29.440	49	52	51	52	57	54	54.3	57	49	308	322	335	312	
6	29.627	29.614	29.525	29.589	47	58	59	50	64	53	55.7	64	47	293	403	321	338	
7	29.505	29.424	29.384	29.438	51	70	61	55	74	64	64.3	74	48	321	679	497	428	
8	29.349	29.356	29.324	29.343	60	62	60	62	67	63	64.0	69	62	491	489	472	476	
9	29.314	29.291	29.313	29.306	50	70	65	52	75	68	65.0	75	50	334	666	577	521	
10	29.486	29.381	29.378	29.415	57	72	61	60	76	64	66.7	76	60	426	731	497	501	
11	29.399	29.338	29.276	29.338	57	68	61	59	73	64	65.3	74	57	439	618	497	501	
12	29.359	29.362	29.402	29.374	57	52	43	60	55	47	54.0	67	47	426	349	225	323	
13	29.438	29.287	29.220	29.315	40	50	47	43	55	49	49.0	59	40	262	225	227	261	
14	29.095	28.965	28.955	29.005	40	55	52	42	59	56	52.3	59	40	221	320	335	312	
15	28.967	29.055	29.230	29.084	50	51	47	52	54	48	51.3	57	49	334	335	310	321	
16	29.403	29.413	29.433	29.416	42	48	41	45	51	44	46.7	53	43	228	226	218	147	
17	29.368	29.315	29.158	29.280	36	48	47	38	52	49	46.3	52	37	186	282	227	221	
18	29.028	28.980	28.933	28.980	50	49	46	52	52	49	51.0	54	49	334	302	271	314	
19	28.843	28.682	28.825	28.783	42	47	50	45	50	53	49.3	54	44	228	223	321	271	
20	28.943	28.997	29.110	29.017	45	50	50	49	57	53	53.0	57	47	247	268	321	272	
21	29.330	29.390	29.427	29.382	41	50	47	45	56	49	50.0	.....	.....	205	282	297	261	
22	29.531	29.423	29.340	29.431	34	59	51	37	62	55	51.3	62	32	157	460	321	311	
23	29.483	29.527	29.545	29.518	48	48	41	50	52	44	48.7	58	43	309	222	335	312	
24	29.593	29.603	29.576	29.591	35	47	42	38	51	45	44.7	54	35	165	270	228	221	
25	29.514	29.463	29.423	29.467	40	49	44	42	53	47	47.3	54	41	221	225	249	233	
26	29.376	29.327	29.343	29.349	41	50	47	45	52	49	48.7	52	43	205	334	297	272	
27	29.283	29.160	29.015	29.153	42	46	45	45	49	47	47.0	49	44	222	271	273	257	
28	28.988	29.103	29.314	29.135	44	38	37	47	41	39	42.3	47	37	249	190	194	211	
29	29.521	29.513	29.521	29.539	37	45	38	39	50	41	43.3	50	37	194	234	190	206	
30	29.712	29.608	29.538	29.619	31	45	43	34	50									

the northern and northwestern lakes, at Cleveland, Ohio.

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a.m.	2 p.m.	9 p.m.	Mean.	7 a.m.	2 p.m.	9 p.m.	7 a.m.	2 p.m.	9 p.m.					7 a.m.	2 p.m.	9 p.m.
848	852	902	867	SE.	S	S	2	2	2	1.9	S. 15 E.	10	10	10		1.50
900	907	858	888	SW.	N	S	2	2	2	0.7	S. 45 W.	10	6	7	.037	1.34
900	863	860	874	SW.	SW	SE.	2	2	2	1.5	S. 19 W.	10	6	0	.078	.05
952	782	819	851	S.	NW	SE.	2	4	2	0.5	S. 67 W.	0	3	5	.014	
860	782	903	848	SW.	NE	S	2	2	2	0.7	South	10	3	8	.104	
916	807	846	866	SE.	N	SE.	2	2	2	1.0	S. 75 E.	10	2	0	.076	.10
890	812	900	867	SE.	NE	S	2	4	2	1.3	S. 81 E.	3	10	10	.098	.01
900	741	862	834	SW.	SW	SE.	12	2	2	4.7	S. 37 W.	10	4	5	.122	.66
904	747	863	838	W	W	SE.	2	2	2	1.0	S. 62 W.	10	3	0	.125	
907	714	824	815	S	S	S	2	4	2	2.7	South	5	6	0	.129	
863	812	896	857	S. SW.	NW	SE.	4	2	2	1.3	S. 22 W.	10	0	0	.100	
853	819	852	855	SE.	NE	S	2	4	2	1.0	S. 49 E.	0	0	0	.100	.16
852	721	924	799	S.	S	S	4	4	2	3.3	South	3	2	0	.127	
817	792	854	821	S	S	S	4	4	2	3.3	South	2	5	0	.075	
848	716	833	799	NE	NE	S	12	4	2	5.0	N. 49 E.	10	0	0	.119	.02
876	585	848	770	S	S	S	2	2	2	2.0	South	0	0	0	.112	
848	718	899	822	N	W	W	2	12	2	5.0	S. 82 W.	0	6	10	.017	
824	816	876	859	NE.	NE	NE	35	25	2	24.0	N. 45 E.	10	10	6	.071	.98
829	780	822	844	SE.	N. NE	SE.	2	4	2	1.7	N. 81 W.	0	0	0	.084	
761	758	833	817	S.	N	S	2	2	2	0.7	South	0	6	0	.054	
820	768	898	850	SW.	N	S	2	2	2	0.7	S. 45 W.	0	5	3	.089	
843	419	804	720	SW.	NW	S	2	2	2	1.0	S. 49 W.	7	5	0	.057	
836	768	865	803	S	N	SE.	2	2	2	0.7	S. 45 E.	6	6	10	.074	
900	815	895	870	S	NW	S	12	4	4	4.7	S. 9 W.	5	10	10	.042	
899	802	890	864	W	N. NE	S	25	4	4	7.7	S. 89 W.	10	0	0	.078	.40
937	836	818	864	S	NE	Calm.	4	12	0	1.0	S. 67 E.	5	0	0	.078	.04
798	681	836	772	SE.	W	SE.	2	2	12	4.1	S. 39 E.	0	0	0	.098	
819	580	843	747	S. SE	W	SE.	4	2	4	1.7	S. 10 E.	0	7	0	.067	
880	657	846	794	S	SW	W	12	12	2	7.7	S. 27 W.	2	7	6	.096	
882	636	878	799	SW.	W	W	2	25	25	17.0	S. 88 W.	10	2	2	.072	.20
878	749	859	829							0.8	S. 26 W.	5.3	4.1	3.1	2.393	5.46
743	570	831	715	S. SW	W	W. NW.	4	4	12	5.3	N. 87 W.	0	3	6		
805	708	747	733	NW.	NW	N. NE.	12	4	4	6.3	N. 33 W.	7	8	9		
761	620	859	780	NW.	W. NW.	W. NW.	12	25	35	23.7	N. 64 W.	8	10	9		
853	802	864	840	N. NW	NW	N. NW.	25	25	35	24.0	N. 29 W.	6	10	10		.11
794	692	802	763	N	N	N	25	12	12	16.3	North	10	6	6		.12
786	675	798	753	S. SE.	W	S	2	4	2	1.7	S. 40 W.	2	0	0		
743	810	833	795	S. SW	SW	SW	12	25	12	16.0	S. 39 W.	6	3	3		
824	740	831	818	SW.	NW	S	2	2	2	1.7	S. 55 W.	9	2	6		
861	768	843	824	S	W	S	4	2	2	2.1	S. 19 W.	0	3	0		
822	815	833	823	S. SW	W. NW.	S	2	2	2	1.3	S. 41 W.	0	0	0		
878	761	833	824	SW	NW	SE.	2	2	2	0.7	S. 45 W.	0	0	0		
872	805	698	792	NE	NE	SE.	25	4	2	9.7	N. 48 E.	10	6	0		
750	681	853	761	SE.	SE	E	4	2	2	2.5	S. 56 E.	5	9	0		
829	761	747	779	SE.	NE	N. NE.	2	2	25	9.0	N. 28 E.	0	10	3		
861	802	925	863	N	N	N	25	35	35	31.7	North	10	9	8		.05
762	790	756	769	N	W	S	12	2	2	3.7	N. 11 W.	6	10	10		.02
811	727	853	797	S. SE	S. by E.	E	4	4	2	2.9	S. 30 E.	9	10	2		
761	794	781	812	S. SW	W	S	12	4	2	5.3	S. 32 W.	10	10	3		.09
762	786	798	782	W	W. SW.	NW	4	25	4	10.0	S. 77 W.	10	10	4		.15
710	577	798	695	W. SW	NW	NW	25	45	25	27.8	N. 61 W.	10	9			.07
634	627	853	721	W. NW	W	W	12	12	2	8.7	N. 80 W.	7	6			
712	828	743	761	S	SW	S	2	2	2	1.9	S. 15 W.	0	3	10		
856	727	802	795	NE	NE	S	12	4	2	5.0	N. 50 E.	10	0	0		
719	722	762	734	SE.	NE	E	2	4	2	2.1	N. 77 E.	0	1	10		
829	733	772	778	E	NE	SE.	2	2	2	1.6	East.	7	3	3		
684	861	853	799	SE.	NE	NE	2	4	25	9.7	N. 48 E.	10	10	10		
762	781	847	797	NE	NE	E	2	4	4	3.1	N. 63 E.	10	10	10		.92
772	738	816	775	SW.	W. SW.	NW	12	35	35	21.7	N. 88 W.	10	10	10		.53
816	646	738	733	SW	W	SW	4	12	2	5.7	S. 75 W.	6	2	4		.23
712	646	767	708	S	W	S	2	2	4	2.1	S. 19 W.	5	5	10		
836	704	750	763	SW	W	S	2	2	2	1.7	S. 45 W.	10	10	10		.06
794	732	806	779							4.5	N. 46 W.	6.2	6.4	5.4		2.25

Reductions of the monthly meteorological register of the ~~service~~

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOUR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
Nov.	1	29.634	29.430	29.247	29.437	37	43	50	39	49	52	46.7	58	32	194.	199.	204.	197.
	2	29.335	29.410	29.443	29.396	45	42	40	48	48	42	46.0	57	42	260.	189.	221.	191.
	3	29.491	29.363	29.285	29.383	40	50	40	42	55	43	46.7	56	40	221.	295.	206.	207.
	4	29.196	29.048	29.094	29.112	34	41	38	37	45	40	40.7	50	35	157.	205.	203.	188.
	5	29.317	29.424	29.482	29.408	32	34	35	35	37	37	36.3	44	34	142.	157.	175.	158.
	6	29.245	29.137	29.394	29.259	30	39	41	32	44	43	39.7	44	29	144.	173.	231.	170.
	7	29.687	29.744	29.714	29.715	32	45	30	35	49	32	38.7	49	31	142.	247.	144.	174.
	8	29.617	29.468	29.436	29.507	28	51	50	30	56	52	46.0	56	28	130.	308.	304.	247.
	9	29.621	29.701	29.762	29.695	40	44	40	43	49	43	45.0	52	42	208.	223.	207.	230.
	10	29.849	29.856	29.867	29.857	34	34	29	37	39	31	35.7	43	31	157.	131.	137.	140.
	11	29.873	29.839	29.822	29.845	20	39	30	22	43	32	32.3	45	20	085.	186.	144.	147.
	12	29.744	29.682	29.636	29.687	26	51	41	28	55	44	42.7	57	25	117.	321.	218.	217.
	13	29.544	29.455	29.383	29.461	34	60	44	38	63	47	49.3	63	37	144.	472.	249.	247.
	14	29.423	29.231	29.203	29.286	34	57	50	38	67	53	52.7	68	36	144.	333.	321.	286.
	15	29.293	29.245	29.277	29.272	43	50	50	45	56	52	51.0	68	44	251.	282.	334.	282.
	16	29.303	29.176	29.132	29.204	42	70	58	46	74	61	63.7	74	45	215.	679.	44.	448.
	17	29.117	29.272	29.370	29.253	57	57	42	59	61	45	55.0	66	42	439.	412.	227.	360.
	18	29.471	29.429	29.393	29.431	35	45	40	38	49	43	43.3	52	35	165.	247.	207.	207.
	19	29.494	29.503	29.508	29.502	40	47	37	42	52	39	44.3	54	39	221.	257.	194.	224.
	20	29.447	29.343	29.284	29.358	30	45	35	33	49	37	39.7	52	31	132.	247.	175.	177.
	21	29.209	29.156	29.092	29.152	31	39	40	34	42	42	39.3	46	32	139.	199.	221.	177.
	22	29.048	29.031	29.057	29.045	42	38	38	43	41	40	41.3	43	40	254.	190.	203.	216.
	23	29.159	29.226	29.346	29.240	38	40	40	40	43	42	41.7	43	38	203.	208.	221.	211.
	24	29.449	29.471	29.444	29.455	37	40	36	40	45	38	41.0	45	37	181.	182.	186.	183.
	25	29.377	29.374	29.433	29.395	33	47	40	35	51	44	43.3	52	33	162.	270.	195.	207.
	26	29.474	29.393	29.416	29.428	40	45	34	42	48	37	42.3	48	36	221.	260.	157.	217.
	27	29.384	29.454	29.522	29.453	36	39	36	38	42	39	39.7	44	32	186.	199.	173.	191.
	28	29.500	29.409	29.217	29.402	28	38	32	30	41	35	35.3	43	30	130.	190.	142.	154.
	29	29.220	29.174	29.134	29.176	33	36	34	35	39	38	37.3	40	32	162.	173.	144.	161.
	30	28.895	28.680	28.810	28.795	35	40	37	38	42	39	39.7	43	35	165.	221.	194.	190.
Means....		29.414	29.371	29.369	29.385	.....	.....	.....	38.1	49.1	42.1	43.1	.....	.....	182.	253.	218.	217.
Dec.	1	29.260	29.024	29.102	29.132	31	34	38	33	38	30	33.7	39	30	151.	144.	130.	142.
	2	28.950	28.879	29.001	28.943	35	47	47	40	51	51	47.3	52	30	139.	270.	270.	227.
	3	29.294	29.265	29.160	29.240	45	53	54	49	56	56	53.7	57	48	247.	363.	331.	324.
	4	29.275	29.467	29.561	29.434	57	44	41	60	48	44	50.7	61	43	426.	236.	212.	277.
	5	29.709	29.674	29.544	29.642	35	34	29	38	39	30	35.7	45	30	165.	131.	130.	147.
	6	29.543	29.325	29.122	29.350	22	32	33	21	35	35	31.3	37	22	095.	142.	162.	137.
	7	29.170	29.398	29.494	29.321	34	32	28	36	35	31	34.0	38	31	170.	142.	119.	144.
	8	29.652	29.552	29.535	29.580	26	35	25	28	40	28	32.0	41	25	117.	139.	100.	118.
	9	29.345	29.192	29.262	29.266	25	34	32	27	36	35	32.7	40	22	112.	170.	142.	141.
	10	29.202	29.131	29.126	29.153	35	45	40	37	60	43	46.7	49	34	178.	102.	208.	167.
	11	29.204	29.156	29.106	29.155	32	50	45	35	34	48	45.7	54	34	142.	308.	260.	277.
	12	29.056	29.070	29.464	29.177	48	57	32	51	62	34	49.0	62	34	296.	399.	155.	281.
	13	29.725	29.735	29.698	29.719	20	21	20	22	24	22	22.7	34	21	085.	079.	085.	070.
	14	29.709	29.734	29.690	29.711	10	10	9	11	12	10	11.0	22	8	057.	046.	054.	067.
	15	29.677	29.625	29.593	29.632	4	15	5	5	17	6	9.3	20	3	041.	043.	043.	047.
	16	29.516	29.381	29.293	29.397	5	16	18	7	19	20	15.3	20	1	032.	056.	076.	057.
	17	29.356	29.397	29.467	29.407	20	27	22	22	30	25	25.7	39	14	085.	113.	074.	091.
	18	29.458	29.330	29.133	29.307	24	32	30	26	35	42	34.3	42	20	106.	142.	199.	147.
	19	29.051	29.101	29.301	29.151	36	39	30	39	41	32	37.3	45	32	173.	212.	144.	177.
	20	29.358	29.203	28.597	29.053	24	26	31	26	29	33	29.3	33	24	106.	106.	151.	127.
	21	29.301	29.484	29.673	29.486	16	13	8	18	16	10	9.7	33	9	067.	044.	040.	081.
	22	29.573	29.711	29.881	29.722	8	16	13	9	18	15	14.0	18	4	051.	056.	056.	064.
	23	29.907	29.785	29.399	29.697	3	24	23	5	27	24	18.7	28	3	027.	045.	112.	077.
	24	29.042	28.989	28.940	28.990	34	38	36	37	42	39	39.3	42	23	157.	177.	173.	162.
	25	29.115	29.171	29.131	29.139	36	38	35	38	43	29	40.0	52	36	186.	164.	132.	167.
	26	29.078	29.042	29.010	29.043	43	34	40	46	57	43	48.7	57	38	238.	378.	207.	275.
	27	29.199	29.406	29.514	29.373	32	33	32	35	37	34	35.3	43	33	142.	136.	135.	144.
	28	29.324	29.404	29.597	29.442	31	32	31	34	35	32	33.7	36	31	139.	142.	162.	147.
	29	29.793	29.774	29.684	29.750	26	30	22	28	32	23	27.7	33	23	117.	144.	107.	123.
	30	29.485	29.485	29.527	29.499	23	36	26	26	39	28	31.0	41	2				



northern and northwestern lakes, at Cleveland, Ohio.

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. saturation = 1,000.			Mean.	Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.			9 p. m.			7 a. m.	2 p. m.
6	.572	.861	.750	SE.....	S.....	SE.....	2	4	12	5.7	S. 35 E.	2	5	10		
7	.563	.829	.723	W. SW.	W.....	W.....	4	25	4	10.7	S. 87 W.	10	10	10		.13
9	.681	.750	.753	S.....	SW.....	S.....	2	2	2	18.7	S. 15 W.	10	5	5		
2	.684	.820	.739	S. SE.	SW.....	W.....	2	2	35	12.0	S. 85 W.	10	10	10		
8	.712	.807	.739	NW.....	W. NW.	W. NW.	35	35	25	31.0	N. 60 W.	10	10	10		.31
4	.597	.833	.743	S.....	W. SW.	W. NW.	12	35	35	22.0	S. 79 W.	5	9	10		
8	.710	.794	.734	NW.....	W.....	S.....	4	2	2	1.7	N. 81 W.	5	3	0		.01
12	.687	.861	.777	S. SE.	S.....	SW.....	4	12	4	6.0	S. 4 W.	0	0	10		
10	.638	.750	.713	N.....	NW.....	S.....	2	2	2	0.7	N. 45 W.	0	10	0		
2	.547	.788	.682	SE.....	NE.....	E. SE.	2	4	2	2.0	N. 84 E.	6	10	0		
21	.669	.794	.728	SE.....	NE.....	SE.....	2	2	2	1.5	S. 71 E.	0	0	0		
8	.743	.756	.756	SE.....	W.....	SE.....	2	2	2	1.0	S. 16 E.	0	0	0		
28	.831	.772	.744	S. SW.	W. NW.	S.....	2	2	2	1.3	S. 41 W.	0	5	0		
28	.503	.798	.643	SE.....	S.....	S.....	4	2	2	2.4	S. 23 E.	0	0	0		
40	.627	.861	.776	SE.....	W.....	S. SE.	2	2	2	1.1	S. 4 E.	5	6	0		
91	.810	.825	.775	S. SE.	SW.....	S.....	12	4	12	8.7	S. 4 E.	3	0	0		
78	.769	.762	.803	S.....	W.....	N.....	4	12	12	5.0	N. 54 W.	0	0	0		
19	.710	.750	.726	S. SE.	NE.....	NE.....	2	2	2	1.2	N. 74 E.	10	10	10		
29	.660	.816	.768	NE.....	N. NE.	Calm...	2	2	0	1.3	N. 35 E.	4	0	0		
03	.710	.807	.740	SE.....	N.....	SE.....	2	2	2	1.0	S. 74 E.	0	4	0		
12	.744	.829	.762	S. SW.	W.....	N. NE.	2	12	25	7.3	N. 8 W.	0	10	10		
16	.738	.820	.825	NW.....	W. NW.	NW.....	25	25	25	24.7	N. 52 W.	9	10	10		.09
20	.750	.829	.800	N. NW.	W. NW.	N.....	25	12	12	14.7	N. 27 W.	10	10	10		.21
32	.607	.811	.717	NW.....	NW.....	S.....	4	2	2	1.6	N. 62 W.	10	10	0		
97	.722	.677	.732	SE.....	NW.....	N. NE.	2	2	4	1.3	N. 22 E.	0	0	10		
129	.777	.712	.773	NE.....	W. NW.	S. SW.	2	4	2	1.1	N. 67 W.	10	8	0		
311	.744	.726	.760	W. NW.	NW.....	NW.....	12	25	4	13.7	N. 51 W.	8	9	6		
782	.738	.698	.739	SE.....	E.....	E.....	2	4	2	2.5	S. 79 E.	5	10	10		
797	.726	.628	.717	S.....	S.....	S.....	2	2	2	2.0	South ..	10	10	10		.01
719	.829	.816	.788	S.....	S.....	W.....	35	12	12	16.3	S. 15 W.	10	10	10		
763	.726	.793	.761							3.7	N. 82 W.	4.7	6.1	5.0		.76
800	.628	.782	.737	SW.....	W.....	S.....	12	12	2	7.7	S. 63 W.	10	5	5		.12
557	.722	.722	.667	S.....	S.....	S.....	12	12	2	8.7	South ..	10	10	4		
710	.809	.872	.797	S. SE.	W. NW.	W.....	2	2	12	4.3	S. 85 W.	10	10	10		
822	.704	.756	.761	S. SW.	N. NW.	NW.....	2	12	25	12.0	N. 40 W.	10	10	10		1.43
719	.547	.782	.683	N.....	N.....	S.....	4	4	2	2.0	North ..	10	9	0		
738	.698	.797	.744	SE.....	SE.....	NE.....	2	4	2	2.1	S. 63 E.		10	10		
802	.698	.685	.728	N. NE.	N. NW.	NW.....	25	4	4	10.0	N. 10 E.	10	10	6		.50
768	.557	.655	.660	NW.....	W.....	SE.....	2	2	2	0.7	West ..	7	0	0		.03
761	.802	.698	.754	S. SE.	SW.....	W.....	4	4	4	2.7	S. 40 W.	5	10	10		.07
807	.196	.750	.584	S.....	SW.....	S.....	4	4	2	3.1	S. 18 W.	6	1	10		
698	.738	.777	.738	S.....	S. SW.	S.....	4	2	12	5.7	S. 3 W.	4	7	0		
790	.718	.792	.767	S.....	S.....	W.....	12	12	25	1.2	S. 46 W.	5	7	0		
721	.610	.721	.684	S. SW.	W.....	W.....	4	12	4	6.0	S. 78 W.	10	10	10		
797	.610	.791	.733	W.....	SW.....	SW.....	25	25	25	23.7	S. 60 W.	10	10	10		
750	.671	.760	.727	S.....	SW.....	S.....	2	4	2	2.4	S. 23 W.	0	7	0		.10
538	.541	.702	.594	S.....	S.....	Calm...	2	4	0	2.0	South ..	10	10	1		
721	.675	.598	.665	S.....	Calm...	S.....	2	0	2	1.3	South ..	10	10	10		
754	.698	.744	.732	S. SE.	S.....	SE.....	2	4	25	10.0	S. 39 E.	10	10	10		
726	.824	.794	.781	SW.....	W.....	W.....	4	12	25	13.3	S. 86 W.	10	10	10		.10
754	.665	.800	.740	E. SE.	E. SE.	SE.....	2	4	4	3.3	S. 58 E.	10	10	10		
682	.492	.582	.585	SW.....	W. SW.	W.....	35	12	12	18.7	S. 58 W.	10	10	10		.18
784	.541	.648	.658	SW.....	W.....	SW.....	12	35	12	18.3	S. 72 W.	10	10	10		
500	.644	.868	.671	S.....	S.....	S.....	2	2	25	9.7	South ..	0	5	10		
712	.661	.726	.700	S.....	S.....	S.....	4	4	25	11.0	South ..	10	10	10		
811	.587	.636	.678	SW.....	SW.....	SE.....	4	2	2	2.1	S. 27 W.	5	0	0		
767	.812	.750	.776	S.....	S.....	Calm...	4	2	0	2.0	South ..	10	10	10		.02
698	.619	.792	.703	NW.....	W.....	SW.....	12	2	2	4.7	N. 58 W.	10	10	10		1.23
712	.698	.896	.769	W. NW.	W.....	W.....	2	4	35	13.3	N. 89 W.	10	10	10		.11
768	.794	.864	.808	W. NW.	S.....	S.....	4	2	2	1.5	S. 56 W.	5	6	4		
634	.726	.768	.709	SW.....	W.....	SE.....	2	2	2	1.2	S. 54 W.	4	0	0		
622	.677	.807	.702	SE.....	SW.....	SE.....	2	4	2	1.9	South ..	0	0	10		
727	.657	.752	.712							4.4	S. 54 W.	7.7	7.6	5.8		3.89



Reductions of the monthly meteorological register of the sum

Barometer reduced to tempera- ture of 32° Fahr., expressed in United States inches and deci- mals.					TEMPERATURE—FAHRENHEIT.										VAPOR		
					Wet bulb, or point of evaporation.			Dry bulb, or tem- perature of the open air.				Maximum.	Minimum.	Elasticity, in inches and mils.			
Date.	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	9 a. m.	9 p. m.	7 a. m.	9 a. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	9 a. m.	9 p. m.	
1866.					o	o	o	o	o	o	o	o	o				
Jan.	1	29.512	29.516	29.599	29.542	31	31	25	33	34	27	31.3	37	27	151	139.115	
	2	29.600	29.515	29.451	29.522	21	34	24	23	38	25	28.7	38	22	099	144.115	
	3	29.365	29.313	29.321	29.334	21	35	27	25	39	29	31.0	39	20	067	152.124	
	4	29.388	29.438	29.599	29.475	20	19	14	22	20	15	19.0	39	15	085	092.072	
	5	29.673	29.662	29.705	29.680	11	12	13	12	14	14	13.3	15	10	061	052.083	
	6	29.747	29.576	29.656	29.660	16	27	23	17	30	25	24.0	32	13	078	113.100	
	7	30.059	30.197	30.352	30.203	16	11	2	17	12	3	10.7	25	3	072	061.034	
	8	30.497	30.509	30.445	30.484	4	12	9	5	14	10	9.7	14	2	041	052.154	
	9	30.350	30.198	30.106	30.218	3	22	13	4	25	15	14.7	28	2	038	042.154	
	10	29.841	29.575	29.505	29.640	17	24	27	19	27	29	25.0	29	12	071	083.134	
	11	29.449	29.415	29.325	29.396	30	32	33	32	36	35	34.3	37	28	144	124.124	
	12	29.130	29.060	28.936	29.042	37	41	43	39	44	46	43.0	46	34	194	217.124	
	13	29.105	29.175	29.292	29.191	32	34	30	35	36	32	34.3	46	32	142	170.144	
	14	29.641	29.716	29.482	29.613	18	15	10	21	17	11	16.3	32	11	065	063.027	
	15	29.580	29.219	28.773	29.191	11	20	30	12	22	32	22.0	32	6	061	065.144	
	16	29.068	29.278	29.381	29.242	26	29	23	28	31	25	28.0	32	6	117	137.100	
	17	29.389	29.168	29.157	29.238	22	30	32	24	35	35	31.3	36	22	095	104.142	
	18	29.125	29.120	29.113	29.119	30	42	35	32	48	37	39.0	48	31	144	129.124	
	19	29.099	29.139	29.101	29.113	46	57	55	49	62	57	56.0	62	35	271	329.457	
	20	29.256	29.557	29.706	29.506	25	17	7	27	20	8	18.3	57	8	112	060.042	
	21	29.693	29.652	29.567	29.637	4	9	13	5	10	14	9.7	14	4	041	054.027	
	22	29.533	29.544	29.590	29.556	14	29	20	15	32	22	23.0	33	12	071	126.083	
	23	29.616	29.516	29.581	29.571	20	23	17	22	26	19	22.3	31	18	085	029.071	
	24	29.541	29.353	29.119	29.338	15	26	29	17	29	31	25.7	32	13	063	106.137	
	25	29.078	29.140	29.256	29.158	25	27	23	27	30	25	27.3	32	25	112	113.100	
	26	29.263	29.263	29.321	29.282	24	27	19	25	30	21	25.3	33	21	117	113.027	
	27	29.419	29.435	29.429	29.428	22	23	21	24	26	24	24.7	27	20	095	029.071	
	28	29.335	29.240	29.230	29.268	22	30	28	24	33	30	29.0	33	24	095	132.130	
	29	29.303	29.286	29.256	29.282	28	33	33	30	36	35	37.0	36	28	130	149.102	
	30	29.064	29.167	29.325	29.185	34	32	27	36	35	30	37.0	34	30	170	142.115	
	31	29.271	29.159	29.082	29.171	22	37	30	25	40	32	32.3	41	23	024	181.144	
Means....		29.483	29.455	29.444	29.461	....	....	....	23.4	30.0	25.5	26.3	....	....	102	124.115.115	
Feb.	1	29.017	29.937	29.110	29.355	25	26	22	27	28	25	26.7	37	25	112	117.024.104	
	2	29.139	29.083	29.125	29.116	18	21	17	20	24	17	20.3	34	17	076	079.024.024	
	3	29.252	29.267	29.384	29.302	11	10	8	12	12	10	11.3	25	8	061	046.040.024	
	4	29.297	29.421	29.642	29.453	12	19	12	13	21	13	15.7	21	6	063	020.063.024	
	5	29.773	29.801	29.859	29.811	2	18	15	3	20	17	13.3	20	2	036	076.063.063	
	6	29.895	29.881	29.804	29.860	17	22	16	18	24	17	19.7	24	15	087	025.072.024	
	7	29.612	29.533	29.503	29.549	12	35	32	13	40	34	29.0	42	10	063	139.153.115	
	8	29.425	29.238	29.303	29.322	26	32	29	28	34	31	31.0	37	27	117	153.137.137	
	9	29.281	29.162	29.014	29.156	26	31	32	27	34	35	32.0	35	25	129	139.142.137	
	10	29.042	29.028	29.046	29.039	35	42	36	38	45	39	40.7	45	34	165	228.172.153	
	11	29.055	29.221	29.407	29.228	31	30	27	33	33	29	31.7	40	29	151	132.124.137	
	12	29.435	29.326	29.446	29.402	25	26	25	27	29	26	27.3	30	26	112	106.126.114	
	13	29.430	29.462	29.444	29.445	25	28	28	27	30	30	29.0	31	25	112	130.130.134	
	14	29.000	28.956	29.192	29.049	35	33	14	37	36	15	29.3	37	15	178	149.071.137	
	15	29.436	29.594	29.748	29.593	-6	5	-6	-5	6	-5	5.3	15	-7	021	043.021.024	
	16	29.919	29.805	29.716	29.813	-12	8	10	-11	9	11	3.0	11	-14	013	051.057.024	
	17	29.724	29.668	29.536	29.643	17	33	30	19	37	32	29.3	37	7	071	136.144.115	
	18	29.491	29.193	29.135	29.273	32	33	34	33	36	36	35.0	36	29	168	149.170.124	
	19	29.103	28.977	29.153	29.078	33	34	28	34	36	30	33.3	37	30	175	170.130.137	
	20	29.270	29.391	29.539	29.400	24	31	24	25	34	26	28.3	34	23	117	139.106.115	
	21	29.672	29.601	29.528	29.600	26	40	40	28	45	42	38.3	47	22	117	129.221.137	
	22	29.554	29.536	29.496	29.529	40	50	45	42	58	48	49.3	58	40	221	255.222.145	
	23	29.443	29.221	29.045	29.236	45	51	50	48	55	52	51.7	59	42	260	321.334.305	
	24	29.072	29.183	29.312	29.189	33	32	28	34	35	29	32.7	52	29	175	142.142.137	
	25	29.651	29.757	29.851	29.753	15	20	15	16	22	16	18.0	29	14	074	085.074.072	
	26	29.969	29.892	29.727	29.863	11	25	28	12	29	30	23.7	30	11	061	024.130.024	
	27	29.572	29.524	29.641	29.579	27	40	28	28	43	32	34.3	44	26	136	308.102.137	
	28	29.554	29.524	29.495	29.524	32	51	29	34	56	52	47.3	56	30	155	308.308.257	
Means....		29.432	29.435	29.436	29.434	....	....	....	23.6	32.6	27.4	29.9	....	....	115	141.131.129	

rthern and northwestern lakes, at Cleveland, Ohio.

VAPOR.			WIND.									Amount of cloudiness. (0=clear sky.) (10=sky entirely overcast.)			Am't of evaporation in U. S. inches and deci- mals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. saturation = 1,000.			Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.						
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.	
.712	.761	.758	W.....	W.....	W.....	2	4	4	3.2	West ...	6	10	9			
.628	.872	.743	S. SW	S.....	SE.....	2	2	2	1.7	S. 7 E.	7	0	0			
.636	.775	.637	S. SW	W.....	NW.....	2	4	25	9.0	N. 55 W.	0	0	10			
.850	.823	.798	NW...	NW...	NW...	35	35	25	31.7	N. 45 W.	10	10	10			
.635	.816	.752	SW...	S W...	S.....	4	4	2	3.0	S. 38 W.	10	10	10			
.675	.746	.752	S.....	S.....	NE.....	2	2	25	7.3	N. 51 E.	10	6	10			
.804	.730	.789	NE...	NE...	NE...	25	12	12	16.3	N. 45 E.	10	10	10			
.635	.791	.725	E. NE	NE...	NE...	4	2	2	2.7	N. 54 E.	10	3	4			
.622	.648	.670	S. SE.	S. SE.	SE.....	2	2	2	2.0	S. 31 E.	0	0	0			
.644	.775	.704	S.....	S.....	Calm...	4	4	Clm	2.7	South...	10	10	10			
.610	.797	.734	S.....	S.....	SE.....	2	2	12	5.0	S. 33 E.	10	10	10			
.756	.767	.780	S.....	S. SW	S.....	12	12	35	18.7	S. 9 W.	10	10	10			
.802	.794	.765	W.....	W.....	W.....	12	12	25	16.3	West...	10	10	10			
.671	.797	.679	N.....	N.....	NE.....	4	2	2	2.7	N. 12 E.	10	10	0			
.721	.794	.773	SE...	SE...	SE...	2	25	45	26.0	S. 45 E.	6	10	10			
.788	.746	.767	SW...	W. SW	N.....	12	12	2	7.7	S. 59 W.	10	5	0			
.537	.698	.658	S.....	S.....	S.....	4	12	2	6.0	South...	10	10	10			
.563	.807	.721	S.....	SW...	S.....	2	4	2	2.3	S. 23 W.	3	2	10			
.718	.874	.791	S.....	SW...	S. SE.	2	4	12	5.3	S. 7 E.	2	7	10			
.556	.777	.701	W.....	W. SW	W.....	25	25	35	28.0	S. 83 W.	10	4	0			
.791	.816	.786	N. NW	NW...	SW...	12	12	2	8.0	N. 38 W.	0	10	0			
.694	.721	.746	S. SE.	W.....	S.....	2	12	2	4.0	S. 73 W.	0	0	6			
.634	.692	.683	S. SE.	NE...	NE...	4	2	2	1.7	S. 10 E.	10	10	....			
.665	.788	.708	NE...	NE...	Calm...	2	4	0	2.0	N. 45 E.	10	10	10			
.675	.746	.727	NW...	NW...	NW...	4	4	2	3.3	N. 45 W.	10	10	10			
.675	.712	.753	SW...	W.....	Calm...	4	2	Clm	1.7	S. 56 W.	10	9	7			
.634	.610	.661	NE...	NE...	Calm...	2	2	Clm	1.3	N. 45 E.	10	10	10			
.703	.782	.741	S.....	S.....	S.....	2	4	2	2.7	South...	10	10	7			
.705	.797	.761	S.....	S. SW	SW...	2	2	2	2.0	S. 21 W.	10	10	10			
.698	.675	.725	SW...	W. SW	W.....	4	4	4	3.7	S. 67 W.	0	2	2			
.732	.794	.716	W.....	W.....	W.....	12	25	12	16.3	West...	3	5	4			
.749	.683	.765	.....	.....	.....	.....	.....	.....	3.9	S. 82 W.	7.3	7.2	6.7			
.761	.768	.622	.717	W.....	W.....	W.....	35	35	35	35.0	West...	5	5	5		
.702	.610	.100	.471	SW by W	NW...	NW...	12	25	35	21.0	N. 56 W.	3	10	10		
.804	.610	.582	.665	N. NW	W. NW	W. NW	25	25	35	26.3	N. 55 W.	10	10	10		
.810	.712	.810	.777	SW...	NW...	SW...	25	25	25	25.0	S. 45 W.	10	4	0		
.730	.702	.671	.701	S.....	SW...	S.....	2	12	2	5.0	S. 35 W.	0	10	10		
.845	.738	.834	.806	SW...	NW...	NW...	2	2	2	1.7	S. 75 W.	10	10	6		
.810	.557	.792	.720	S.....	SW...	S.....	4	2	2	2.7	S. 10 W.	0	10	....		
.768	.792	.788	.783	Calm...	N.....	NE.....	Clm	2	4	1.7	N. 34 E.	10	10	10		
.880	.712	.698	.763	S.....	S.....	S.....	2	4	25	10.3	South...	10	10	10		
.719	.762	.726	.736	S.....	S.....	Calm...	2	4	0	2.0	South...	10	10	10		
.800	.703	.775	.759	NE...	N.....	N.....	4	4	25	10.7	N. 5 E.	10	10	10		
.761	.665	.876	.767	N. NE	NE...	NE...	12	12	2	8.7	N. 33 E.	10	10	10		
.761	.682	.782	.775	SW...	W.....	W.....	4	2	2	2.3	S. 24 W.	10	10	10		
.807	.705	.823	.778	SW...	NE...	W.....	12	25	25	6.0	N. 59 W.	10	10	10		
.627	.760	.627	.671	W. SW	W.....	SW...	25	4	4	10.7	S. 67 W.	10	6	0		
.519	.784	.797	.700	S.....	SW...	SW...	2	12	12	8.7	S. 41 W.	0	0	0		
.692	.619	.794	.702	S.....	SW...	W. SW	12	4	12	10.7	S. 25 W.	6	5	....		
.893	.705	.802	.800	SE...	SE...	SE...	4	4	4	4.0	S. 45 E.	10	10	10		
.895	.802	.782	.826	W. SW	W.....	W. SW	2	4	12	6.0	S. 72 W.	10	10	6		
.872	.712	.754	.779	SE...	W.....	W.....	4	4	4	2.0	S. 71 W.	10	0	4		
.768	.607	.829	.735	S. SW	S. SW	S.....	4	12	12	9.0	S. 13 W.	8	4	0		
.829	.529	.777	.712	S. SW	S. SW	S.....	12	25	4	13.7	S. 20 W.	5	10	7		
.777	.743	.861	.794	S.....	S.....	S.....	4	25	4	11.0	South...	10	6	10		
.895	.698	.887	.827	NW...	W. NW	W. NW	25	25	12	20.3	N. 58 W.	10	3	4		
.829	.721	.829	.793	NW...	W. NW	W. NW	25	4	4	11.0	N. 51 W.	10	5	6		
.804	.556	.782	.714	SW...	SW...	S.....	2	4	2	2.7	S. 30 W.	10	0	10		
.883	.750	.594	.742	SE...	NE...	Calm...	4	4	0	18.7	East...	3	0	0		
.792	.687	.794	.758	S.....	S.....	S.....	4	4	4	4.0	South...	10	10	10		
.787	.696	.742	.742	.....	.....	.....	.....	.....	5.6	S. 79 W.	7.8	7.0	6.3			

Reductions of the monthly meteorological register of the army

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOUR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in inches and decimals.				
														7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					°	°	°	°	°	°	°	°	°					
March	1	29.355	29.411	29.404	29.390	43	58	51	47	62	54	54.3	62	45	225	428	351	268
	2	29.380	29.276	29.238	29.298	46	64	58	49	67	60	58.7	67	47	271	556	456	294
	3	29.466	29.438	29.429	29.444	34	43	36	37	47	38	40.7	60	35	157	225	196	190
	4	29.400	29.590	29.568	29.519	28	25	24	30	27	26	27.7	38	26	130	112	106	114
	5	29.641	29.666	29.608	29.638	23	34	28	24	37	30	30.3	40	22	112	157	131	133
	6	29.693	29.671	29.573	29.646	21	35	30	23	42	32	32.3	43	23	090	113	144	114
	7	29.515	29.536	29.606	29.551	29	30	23	31	32	25	29.3	34	24	137	144	107	144
	8	29.643	29.662	29.615	29.640	21	33	28	22	36	30	29.3	36	22	101	149	137	129
	9	29.325	29.427	29.614	29.455	....	28	21	....	30	22	25.7	32	22	....	130	107	114
	10	29.745	29.653	29.396	29.598	18	34	28	19	39	31	29.7	41	17	087	131	119	111
	11	29.090	29.057	29.142	29.096	38	43	46	41	46	48	45.0	48	30	190	251	294	198
	12	29.232	29.409	29.509	29.383	34	35	33	36	37	35	36.0	48	34	170	178	172	173
	13	29.550	29.567	29.520	29.546	32	32	32	34	35	34	34.3	35	33	155	142	153	150
	14	29.387	29.394	29.432	29.404	40	43	37	40	46	38	41.3	50	33	248	236	297	228
	15	29.456	29.212	29.245	29.304	35	34	32	35	35	34	34.7	40	33	204	183	155	179
	16	29.173	29.033	29.173	29.126	31	35	22	32	37	23	30.7	37	23	162	178	107	144
	17	29.284	29.391	29.481	29.385	15	18	15	16	20	16	17.4	23	14	074	076	054	074
	18	29.354	29.171	29.255	29.260	14	27	31	15	29	32	25.3	32	7	071	124	162	112
	19	29.291	29.260	29.294	29.282	27	28	25	28	30	27	28.3	32	25	136	130	112	126
	20	29.198	29.073	29.840	29.370	28	32	32	29	33	34	32.0	35	25	142	162	153	151
	21	28.987	29.218	29.446	29.217	33	30	26	35	31	28	31.3	48	28	162	155	117	133
	22	29.626	29.592	29.365	29.528	26	36	32	27	39	33	33.0	41	23	129	173	168	157
	23	29.107	29.153	29.230	29.163	36	42	32	38	45	34	39.0	47	33	186	222	152	184
	24	29.312	29.116	29.061	29.163	28	36	33	30	39	36	35.0	43	39	130	173	143	149
	25	29.308	29.332	29.406	29.349	17	21	17	18	23	18	19.7	36	16	083	090	072	077
	26	29.587	29.675	29.625	29.629	16	27	20	17	30	22	23.0	34	14	067	113	085	077
	27	29.753	29.752	29.717	29.741	13	35	25	14	39	27	23.3	39	10	067	144	112	077
	28	29.385	29.102	29.125	29.204	29	38	37	31	40	39	36.7	40	25	137	902	194	107
	29	29.215	29.290	29.340	29.282	29	30	28	30	33	30	31.0	40	30	149	132	130	137
	30	29.444	29.239	29.203	29.295	23	40	33	25	43	35	34.3	45	23	100	206	162	157
	31	29.882	28.881	29.079	29.281	38	50	37	39	53	39	43.7	53	33	216	321	194	244
Means....		29.412	29.363	29.404	29.393	....	....	....	29.6	38.1	32.6	33.4	....	....	143	186	158	167
April	1	29.346	29.445	29.451	29.414	35	45	36	37	49	38	41.3	51	35	172	247	186	195
	2	29.369	29.314	29.356	29.346	38	40	35	39	42	37	39.3	46	37	216	221	173	206
	3	29.401	29.364	29.292	29.352	35	45	43	37	49	45	43.7	57	33	178	247	251	207
	4	29.357	29.298	29.258	29.304	51	75	66	54	84	69	69.0	84	45	335	746	599	566
	5	29.228	29.326	29.475	29.343	62	57	40	70	63	44	59.0	70	40	449	386	195	341
	6	29.524	29.516	29.553	29.531	35	40	33	37	42	35	38.0	45	34	178	221	162	197
	7	29.604	29.580	29.559	29.581	31	32	30	32	35	31	32.7	36	31	162	142	155	152
	8	29.540	29.535	29.583	29.553	28	38	30	30	42	31	34.3	44	28	130	177	153	154
	9	29.630	29.624	29.566	29.607	23	46	32	25	51	35	37.0	53	23	100	245	142	162
	10	29.457	29.355	29.325	29.379	32	48	50	35	58	53	48.7	59	32	142	233	221	227
	11	29.365	29.354	29.433	29.384	45	60	51	49	65	55	56.3	68	47	247	451	321	347
	12	29.360	29.162	29.201	29.241	44	71	50	48	76	52	58.7	76	47	236	221	334	477
	13	29.477	29.526	29.469	29.491	41	46	40	43	49	42	44.7	55	42	231	271	221	241
	14	29.311	29.211	29.345	29.289	41	60	44	44	65	46	51.7	69	38	218	451	262	311
	15	29.468	29.458	29.387	29.438	38	48	40	48	50	42	46.7	53	38	099	302	291	291
	16	29.306	29.386	29.362	29.371	36	47	44	38	50	46	44.7	54	36	176	283	262	244
	17	29.445	29.445	29.468	29.453	51	72	60	53	76	62	63.7	77	45	348	731	491	527
	18	29.509	29.441	29.438	29.463	52	72	70	55	80	72	69.0	83	55	349	677	726	717
	19	29.436	29.415	29.285	29.379	62	70	68	67	74	70	70.3	77	64	429	679	633	693
	20	29.253	29.295	29.112	29.220	62	70	65	68	78	68	71.3	79	65	476	625	577	557
	21	29.078	29.990	28.982	29.017	60	64	57	63	76	59	66.0	76	59	472	562	433	452
	22	29.048	29.061	29.058	29.056	50	59	48	54	66	51	57.0	70	51	308	407	286	311
	23	28.640	28.605	28.807	28.624	42	36	37	44	39	36	40.7	51	35	241	173	194	206
	24	28.897	28.876	28.919	28.897	38	50	43	40	55	45	46.7	55	38	203	225	251	231
	25	28.895	28.976	29.126	29.999	37	50	39	39	56	41	45.3	58	38	194	222	212	222
	26	29.329	29.292	29.287	29.303	35	46	43	38	54	44	45.3	56	35	165	206	204	172
	27	29.377	29.248	29.246	29.290	35	60	55	37	65	58	53.3	70	34	178	451	393	341
	28	29.063	29.047	29.252	29.121	50	74	50	67	79	53	66.3	83	53	136	772	291	416
	29	29.450	29.399	29.317	29.389	42	68	49	45	66	51	54.0	68	43	142	....	291	311

*northern and northwestern lakes, at Cleveland, Ohio.*

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
698	.772	.802	.757	SE....	S.....	S.....	2	4	2	2.7	S. 10 E.	6	7	0		
781	.841	.880	.831	S.....	S.....	S.....	2	12	12	8.7	South..	5	10	6		
712	.698	.811	.740	SW....	W.....	NW....	2	12	4	5.7	N. 84 W.	4	7	0		
782	.761	.754	.766	NW....	W.NW..	NW....	35	25	25	2.8	N. 51 W.	10	10	10		
868	.712	.782	.787	NW....	W.....	W.NW..	12	12	4	9.0	N. 67 W.	5	0	0		
730	.420	.794	.648	N.....	W.NW..	NW....	4	4	2	3.0	N. 41 W.	0	10	10		
788	.794	.746	.776	N.NW..	N.....	NW....	25	25	25	2.4	N. 23 W.	10	3	0		
860	.705	.782	.782	NW....	NW....	NW....	4	12	4	6.7	N. 45 W.	10	0	0		
	.782	.860	.821	W.....	NW....	NW....	2	12	4	6.0	N. 50 W.	10	7	3		
845	.547	.685	.692	W.NW..	N.NW..	SE....	2	2	4	1.0	S. 45 E.	2	2	0		.09
738	.840	.850	.800	S.....	S.....	Calm..	12	2	0	4.7	South..	10	10	10		.06
802	.807	.797	.802	NW....	N.....	NE....	2	2	2	1.6	North..	10	10			.59
792	.698	.792	.761	NE....	NE....	E. SE..	2	12	2	5.0	N. 51 E.	10	10	10		.18
100	.767	.905	.591	S.....	NE....	NE....	2	2	2	1.0	N. 74 E.	10	10	10		.09
100	.898	.792	.597	N.....	N.....	N.....	2	4	2	2.7	N. 8 E.	10	10	10		.08
896	.807	.864	.856	SW....	W.....	W.....	2	35	35	2.4	S. 89 W.	6	10	4		.24
829	.702	.829	.787	W.NW..	W.NW..	W.NW..	35	35	35	3.5	N. 67 W.	10	7	8		.10
823	.775	.896	.831	S. SW..	W.....	Calm..	2	12	0	4.3	S. 82 W.	10	10	10		.11
883	.782	.761	.809	SW....	NW....	NW....	2	4	2	2.0	N. 62 W.	10	10	10		.30
887	.893	.792	.857	NE....	NE....	SE....	2	4	2	2.0	N. 62 E.	10	10	10		
797	.893	.768	.819	W.....	W.NW..	S.....	12	25	2	12.0	N. 78 W.	10	7	10		.96
680	.726	.893	.833	N.....	NE....	N.....	2	2	2	2.0	N. 13 E.	2	0	0		
811	.762	.792	.788	SE....	W.NW..	W.NW..	4	12	12	7.0	N. 71 W.	10	6	10		
782	.726	.705	.738	SW....	N.....	NW....	4	4	35	1.2	N. 47 W.	10	10	10		
840	.730	.834	.801	N.....	NW....	NW....	4	25	35	2.3	N. 42 W.	10	7	10		.19
682	.675	.721	.693	NW....	NW....	SW....	12	4	2	5.3	N. 52 W.	10	6	0		.05
816	.628	.761	.735	SW....	NE....	SE....	2	4	2	0.7	N. 78 E.	0	5	6		
788	.820	.816	.808	S. SE..	S.....	W.NW..	25	12	25	9.7	S. 28 W.	10	10	10		
890	.703	.782	.792	W.NW..	W.NW..	NW....	12	12	2	8.7	N. 66 W.	10	10	10		.56
746	.750	.797	.764	NW....	SW....	Calm..	2	2	0	0.9	West....	0	6	10		.04
907	.798	.816	.840	S.....	SW....	S.....	12	12	2	8.0	S. 21 W.	10	7	10		.11
.762	.749	.802	.771							6.1	N. 65 W.	7.8	7.7	6.3		37.6
.807	.710	.811	.776	W.....	W.....	NE....	2	2	2	1.0	N. 62 W.	5	4	10		.14
907	.829	.807	.848	NE....	NE....	SE....	2	4	2	2.0	N. 62 E.	10	10	0		.08
807	.710	.840	.786	S. SE..	N.....	SE....	4	2	2	1.3	S. 40 E.	0	0	0		.25
802	.640	.846	.763	S.....	S. SW..	SE....	2	12	2	5.0	S. 13 W.	0	0	0		
613	.670	.677	.653	S. SW..	W.....	W.....	4	12	2	5.3	S. 76 W.	5	7	10		
807	.829	.797	.811	W.....	W.....	W.NW..	2	2	4	6.0	N. 85 W.	10	10	0		
896	.698	.893	.829	N.NW..	NE....	NE....	2	2	2	1.7	N. 24 E.	10	10	10		
782	.661	.893	.779	NE....	NE....	SE....	4	4	2	2.7	N. 29 E.	6	5	0		
746	.653	.698	.699	NE....	NE....	Calm..	2	12	0	4.7	N. 45 E.	0	0	0		
698	.421	.798	.639	NE....	SW....	S.....	2	12	2	4.0	S. 36 W.	9	8	10		
710	.731	.743	.728	SW....	NE....	NE....	4	4	2	0.7	N. 45 E.	2	0	0		
704	.771	.861	.779	S.....	S.....	W.....	12	35	25	18.0	S. 28 W.	0	10	10		.38
833	.781	.829	.814	W.....	N.....	Calm..	2	4	0	1.7	N. 23 W.	0	0	0		
756	.731	.843	.777	S. SW..	W.....	W.....	4	25	12	13.0	S. 85 W.	6	10	0		.08
292	.856	.829	.659	NE....	NE....	Calm..	2	12	0	4.7	N. 45 E.	5	3	0		
811	.786	.843	.813	NE....	NE....	SE....	2	4	2	2.0	N. 62 E.	0	0	0		
864	.815	.884	.854	SE....	S.....	S.....	12	25	35	23.0	S. 7 E..	3	6	6		
805	.661	.900	.789	S.....	S.....	S.....	12	25	2	13.0	South..	0	6	10		
740	.810	.898	.816	S.....	N.....	S.....	2	4	2			7	5	7		
695	.653	.843	.730	S.....	S.....	NE....	12	12	2	7.7	S. 4 E..	5	10	10		.10
831	.891	.878	.867	S. SW..	SW....	S.....	2	25	2	9.3	S. 41 W.	3	5	4		
738	.636	.790	.721	SW....	W.NW..	Calm..	2	4	0	1.7	N. 89 W.	0	3	3		.47
836	.726	.816	.793	NE....	N.....	N.NW..	35	45	35	34.3	N. 6 E..	10	10	10		1.26
820	.681	.840	.780	W.....	W.....	W.....	12	12	25	16.3	West....	5	3	6		.02
816	.627	.824	.756	SW....	N.....	N.....	2	4	2	1.7	N. 16 W.	4	0	0		
719	.493	.918	.710	NW....	W.....	S.....	4	12	2	4.7	N. 87 W.	0	0	0		
807	.731	.816	.785	SE....	SE....	SE....	2	4	4	3.3	N. 45 E.	0	6	10		
206	.779	.798	.594	SW....	SW....	NW....	12	12	12	9.0	S. 71 W.	0	0	6		
698		.859	.779	S.....	W.....	S. SW..	2	12	4	5.0	S. 67 W.	0	0	0		
738	.634	.847	.740	NE....	NE....	Calm..	2	4	0	2.0	N. 45 E.	0	2	10		
.743	.711	.827	.762							2.0	S. 59 W.	3.3	4.7	4.3		2.78



Reductions of the monthly meteorological register of the army

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.							Elasticity in inches and decimals.			
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					°	°	°	°	°	°	°	°	°					
May	1	28.959	28.723	28.954	28.879	43	48	37	45	51	39	45.0	56	39	251	252	253	252
	2	29.184	29.245	29.260	29.230	40	51	38	42	55	40	45.7	55	38	291	321	323	305
	3	29.036	29.329	29.244	29.203	36	50	42	39	57	45	47.0	60	35	173	262	229	221
	4	29.248	29.285	29.156	29.230	40	57	52	43	67	55	55.0	71	38	202	333	349	294
	5	29.210	29.191	29.227	29.209	43	60	51	47	64	54	55.0	70	45	225	465	333	307
	6	29.368	29.365	29.375	29.369	40	55	47	42	59	50	50.3	63	41	221	380	323	308
	7	29.463	29.472	29.394	29.443	40	57	48	43	61	50	51.3	64	40	202	412	309	304
	8	29.310	29.153	28.995	29.153	44	56	57	47	62	60	56.3	67	43	249	362	425	358
	9	29.202	29.173	29.158	29.178	48	55	50	51	59	53	54.3	62	49	296	380	371	356
	10	29.275	29.254	29.181	29.237	46	60	55	49	68	59	58.7	71	46	271	411	380	354
	11	29.196	29.176	29.131	29.168	50	62	55	54	69	59	60.7	74	50	302	462	330	331
	12	29.234	29.183	29.211	29.209	52	75	59	55	84	62	67.0	84	50	349	746	460	522
	13	29.138	29.210	29.295	29.214	44	48	42	46	51	45	47.3	62	43	262	296	228	260
	14	29.425	29.425	29.377	29.409	37	54	44	40	59	47	48.7	60	36	181	351	249	260
	15	29.335	29.128	29.068	29.177	40	65	58	43	69	61	57.7	71	36	202	564	443	386
	16	29.141	29.211	29.255	29.202	50	46	43	52	49	45	48.7	61	44	334	271	251	285
	17	29.280	29.232	29.171	29.228	42	50	47	44	54	49	49.0	59	42	241	302	297	280
	18	29.109	29.040	29.035	29.061	48	72	67	50	78	70	66.0	84	43	309	704	622	545
	19	29.120	29.165	29.095	29.127	57	70	62	60	74	66	66.7	83	58	426	679	502	536
	20	29.075	29.004	29.065	29.048	65	76	58	70	83	62	71.7	89	62	550	802	629	694
	21	29.181	29.234	29.304	29.240	50	56	46	53	65	49	55.7	65	49	321	330	271	307
	22	29.425	29.407	29.390	29.407	44	56	47	47	63	50	53.3	67	43	249	343	283	292
	23	29.465	29.446	29.387	29.433	40	58	52	43	67	56	55.3	72	37	202	363	335	300
	24	29.485	29.457	29.317	29.420	41	59	56	45	69	59	57.7	73	41	205	367	409	327
	25	29.242	29.105	29.068	29.138	48	58	57	52	80	60	64.0	84	47	282	524	426	411
	26	29.020	28.960	28.855	28.945	52	61	60	55	69	64	62.7	74	52	349	430	465	415
	27	28.539	28.552	28.664	28.585	63	69	52	67	73	55	65.0	74	55	522	655	349	502
	28	28.931	29.128	28.973	29.011	47	55	53	49	59	55	54.3	66	48	297	380	376	351
	29	28.969	29.088	29.106	29.054	45	54	49	47	58	51	52.0	59	46	273	365	321	326
	30	29.171	29.111	29.071	29.118	45	65	61	48	69	65	60.7	72	45	260	564	483	432
	31	29.345	29.412	29.320	29.359	45	60	50	51	67	55	57.7	70	50	220	425	295	312
Means....		29.196	29.189	29.165	29.183	.....	.....	.....	56.7	65.8	54.5	56.1	.....	.....	280	437	332	356
June	1	29.433	29.389	29.349	29.390	49	61	60	51	67	63	60.3	66	48	321	457	472	429
	2	29.354	29.273	29.173	29.267	60	63	61	63	71	65	66.3	72	57	478	469	483	477
	3	29.008	28.945	28.943	28.959	65	60	60	68	62	62	64.0	70	61	577	491	491	520
	4	28.953	28.990	29.042	28.995	60	68	65	63	72	68	67.7	78	62	478	631	577	562
	5	29.058	29.040	29.095	29.064	65	70	65	66	77	68	70.3	84	65	604	639	577	607
	6	29.055	29.085	29.065	29.068	60	58	59	62	64	62	62.7	68	58	491	403	460	451
	7	29.194	29.233	29.211	29.213	60	68	63	62	73	65	66.7	80	62	529	618	549	563
	8	29.243	29.212	29.117	29.191	60	80	75	63	89	80	77.3	93	62	478	901	800	726
	9	29.220	29.300	29.120	29.213	65	74	68	70	82	73	75.0	88	69	550	731	618	623
	10	29.485	29.518	29.493	29.499	61	71	61	65	78	65	69.3	84	60	483	664	483	543
	11	29.241	29.551	29.458	29.417	56	66	60	60	74	63	65.7	77	57	396	532	478	435
	12	29.393	29.374	29.218	29.328	61	77	70	66	86	73	75.0	91	60	470	805	653	656
	13	29.178	29.159	29.142	29.160	70	76	71	75	86	77	79.3	90	72	666	762	678	702
	14	29.193	29.218	29.155	29.189	67	70	64	70	78	69	72.3	82	69	622	625	529	582
	15	29.278	29.198	29.145	29.207	62	70	62	66	79	67	70.7	84	61	562	612	429	534
	16	29.155	29.161	29.174	29.163	57	67	60	60	76	64	66.7	80	58	426	542	465	473
	17	29.153	29.095	28.918	29.055	56	58	53	59	61	55	58.3	65	55	409	443	376	409
	18	28.751	28.778	28.913	28.814	48	49	52	50	51	54	51.7	55	50	309	321	362	331
	19	29.143	29.302	29.349	29.265	50	60	55	53	65	59	59.0	65	52	321	451	330	384
	20	29.456	29.448	29.408	29.437	52	70	63	55	77	67	66.3	84	51	349	639	522	502
	21	29.361	29.240	29.208	29.270	62	75	66	65	84	69	72.7	86	60	516	746	668	643
	22	29.255	29.260	29.233	29.249	63	70	65	67	76	69	70.7	81	67	522	632	564	579
	23	29.281	29.224	29.245	29.250	62	76	64	66	84	67	72.3	87	63	502	789	556	616
	24	29.348	29.344	29.369	29.354	66	76	76	70	86	80	78.7	92	76	586	762	843	730
	25	29.434	29.444	29.462	29.447	73	81	72	76	89	75	80.0	92	73	771	948	744	821
	26	29.358	29.241	29.197	29.265	71	80	74	74	86	77	79.0	92	72	718	942	799	820
	27	29.137	29.147	29.231	29.172	69	71	63	71	79	66	72.0	84	66	682	651	536	623
	28	29.322	29.394	29.429	29.382	54	60	55	56	64	58	59.3	70	56	404	465	393	421
	29	29.557	29.418	29.366	29.447	51	63	60	53	71	63	62.3	73	49	342	469	478	422
	30	29.404																

: northern and northwestern lakes, at Cleveland, Ohio.

VAPOR.				WIND.									Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.						
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.	
.840	.790	.816	.815	N .....	N. NE.	NE....	2	2	2	2.0	N. 19 E.	10	10	10	.....	.02	
.829	.743	.820	.797	N .....	N .....	E .....	12	12	2	4.3	N. 5 E.	3	7	4	.....	.08	
.726	.577	.762	.688	N .....	W .....	S .....	2	2	2	0.7	West...	6	3	0	.....	.....	
.750	.503	.805	.686	SW .....	W. NW	W .....	2	4	4	3.0	N. 89 W.	0	0	3	.....	.....	
.698	.780	.802	.760	SW .....	W .....	S .....	2	4	2	2.0	S. 56 W.	0	3	10	.....	.....	
.829	.761	.786	.792	N. NE.	NW ..	Calm..	2	2	0	1.0	N. 10 W.	10	0	0	.....	.58	
.750	.769	.856	.792	NW ..	N. NE.	SE ..	2	2	2	0.7	N. 17 E.	0	0	2	.....	.....	
.772	.665	.822	.753	SE ..	S .....	SE ..	2	2	2	1.7	S. 33 E.	0	10	10	.....	.....	
.790	.761	.798	.783	W .....	N .....	SE ..	4	2	2	1.0	N. 79 W.	10	10	0	.....	.08	
.751	.601	.761	.714	S .....	NE ..	SE ..	2	4	2	1.3	S. 81 E.	0	7	0	.....	.....	
.738	.653	.761	.717	S .....	NE ..	Calm..	2	4	0	1.0	N. 77 E.	0	8	0	.....	.....	
.805	.640	.828	.758	S .....	SW ..	SW ..	2	12	2	5.0	S. 41 W.	0	5	10	.....	.....	
.843	.790	.762	.798	N. NE.	W .....	Calm..	25	4	0	8.0	N. 14 E.	10	3	0	.....	.52	
.732	.703	.772	.736	SW ..	N .....	S .....	2	4	2	0.7	N. 74 W.	0	0	0	.....	.48	
.750	.796	.825	.790	S .....	S .....	S .....	4	25	25	18.0	South ..	0	3	7	.....	.....	
.861	.781	.840	.827	N .....	NE ..	NE ..	12	12	25	15.7	N. 55 E.	10	10	0	.....	.29	
.836	.738	.853	.809	NE ..	NE ..	Calm..	12	4	0	5.3	N. 45 E.	2	3	0	.....	.24	
.856	.734	.848	.813	S .....	SW ..	S .....	4	4	2	3.0	S. 18 W.	5	0	0	.....	.....	
.822	.810	.786	.806	W. SW.	N .....	S .....	2	2	4	1.0	S. 36 W.	0	4	0	.....	.....	
.751	.711	.772	.745	S .....	W .....	W .....	2	35	4	13.3	S. 87 W.	0	6	0	.....	.....	
.798	.535	.781	.705	N .....	N .....	N .....	4	12	4	6.7	North ..	4	3	0	.....	.05	
.772	.575	.786	.711	N .....	W. NW	NW ..	12	12	2	7.3	N. 33 W.	5	0	3	.....	.....	
.750	.550	.747	.682	NW ..	W. NW	NE ..	4	2	12	4.3	N. 16 E.	0	0	0	.....	.....	
.684	.518	.819	.674	S .....	W. NW	S .....	2	4	2	1.3	S. 52 W.	0	0	0	.....	.....	
.727	.512	.822	.687	S. SW.	W. NW	SE ..	4	12	2	3.7	S. 87 W.	0	0	0	.....	.....	
.805	.607	.780	.731	Calm..	NE ..	Calm..	0	2	0	0.7	N. 45 E.	0	4	10	.....	.....	
.790	.807	.805	.801	S .....	S. SW.	W .....	25	35	35	25.0	S. 40 W.	8	10	10	.....	.29	
.853	.761	.869	.828	NW ..	W .....	S. SW.	35	25	2	18.7	N. 66 W.	10	10	10	.....	.93	
.847	.756	.859	.821	W .....	W. NW	S .....	25	12	2	12.3	N. 86 W.	10	4	5	.....	.21	
.777	.796	.783	.785	SW ..	SW ..	W .....	4	12	4	6.3	S. 53 W.	3	6	10	.....	.05	
.590	.642	.681	.638	N .....	N .....	SE ..	4	2	2	1.7	N. 16 E.	10	0	4	.....	.....	
.779	.689	.800	.736	.....	.....	.....	.....	.....	.....	2.0	N. 81 W.	3.7	4.2	3.5	.....	3.82	
.859	.690	.831	.793	S .....	NE ..	S .....	4	4	2	1.3	S. 37 E.	10	1	0	.....	.05	
.931	.618	.783	.744	S .....	NE ..	SE ..	2	12	4	4.0	N. 71 E.	0	10	5	.....	.....	
.843	.884	.884	.870	SE ..	NE ..	SE ..	25	35	12	16.7	S. 88 E.	6	10	10	.....	.....	
.831	.801	.843	.826	S .....	N .....	S. SE.	4	4	4	1.3	S. 22 E.	7	5	10	.....	1.01	
.945	.629	.843	.826	S .....	SW ..	S. SW.	4	12	4	6.3	S. 32 W.	10	7	10	.....	.08	
.884	.675	.828	.796	S .....	SW ..	SW ..	12	25	25	20.0	S. 37 W.	3	10	10	.....	.45	
.828	.761	.890	.846	W .....	W. NW	SW ..	4	4	2	3.0	N. 89 W.	10	6	5	.....	.02	
.831	.660	.782	.758	S .....	N. NE.	S .....	4	4	2	1.0	S. 29 E.	5	2	0	.....	.....	
.751	.669	.761	.727	S .....	NW ..	Calm..	4	2	0	1.0	S. 28 W.	4	3	0	.....	.....	
.783	.693	.783	.753	W .....	NW ..	Calm..	2	2	0	1.3	N. 69 W.	0	1	0	.....	.....	
.765	.634	.831	.743	NE ..	NE ..	SE ..	2	12	2	4.7	N. 53 E.	0	3	0	.....	.....	
.735	.648	.854	.746	W .....	S .....	S .....	4	2	2	2.0	S. 45 W.	0	5	6	.....	.....	
.768	.613	.731	.704	SW ..	S .....	S. SW.	4	2	4	3.0	S. 44 W.	7	3	4	.....	.49	
.848	.653	.747	.749	W .....	W. SW	W. SW	2	12	12	8.7	S. 68 W.	10	0	0	.....	.06	
.786	.618	.740	.715	SW ..	W .....	SW ..	4	12	4	7.0	S. 74 W.	0	3	4	.....	.....	
.822	.603	.780	.735	SW ..	NW ..	W .....	4	2	2	2.3	S. 75 W.	3	6	5	.....	.....	
.819	.825	.869	.838	SE ..	NE ..	NE ..	2	4	45	16.3	N. 48 E.	10	10	10	.....	.....	
.856	.859	.867	.861	W. SW	SW ..	W .....	25	25	35	26.7	S. 70 W.	10	10	10	.....	3.93	
.798	.731	.761	.763	W .....	W .....	S .....	25	12	2	12.7	S. 87 W.	4	3	0	.....	.94	
.805	.689	.790	.761	S .....	W .....	S .....	4	12	4	5.0	S. 56 W.	0	0	0	.....	.....	
.836	.640	.852	.779	S .....	S. SW.	W .....	2	25	12	11.0	S. 40 W.	0	7	10	.....	.....	
.790	.727	.796	.771	SW ..	NW ..	S .....	2	4	2	1.3	S. 81 W.	0	0	0	.....	1.87	
.786	.677	.841	.768	S. SE.	SE ..	SE ..	2	2	2	2.0	S. 38 E.	3	10	10	.....	.....	
.799	.613	.824	.745	S .....	S .....	S. SW.	2	2	2	2.0	S. 8 W.	0	6	3	.....	1.34	
.860	.694	.858	.804	SW ..	NW ..	S. SE.	2	12	2	3.7	N. 58 W.	0	9	3	.....	.....	
.856	.758	.862	.825	SE ..	S .....	S .....	2	12	2	5.3	S. 5 E.	0	6	4	.....	.....	
.899	.657	.838	.798	NW ..	W .....	N. NW.	12	12	25	14.7	N. 44 W.	10	2	7	.....	.01	
.934	.780	.816	.843	N .....	W. NW	NW ..	12	4	4	6.3	N. 13 W.	6	1	0	.....	.04	
.864	.618	.831	.771	SW ..	SW ..	Calm..	2	2	0	1.3	S. 45 W.	5	6	8	.....	.....	
.819	.648	.783	.750	W. SW	N .....	SE ..	2	2	2	0.3	S. 71 W.	0	5	0	.....	.01	
.830	.694	.816	.780	.....	.....	.....	.....	.....	.....	2.4	S. 64 W.	4.1	5.0	4.5	.....	10.30	



Reductions of the monthly meteorological register of the survey.

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOUR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
														7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.
1865.	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.	
July 1	29.336	29.194	29.171	29.234	66	69	65	68	80	66	71.3	81	65	.612	.561	.624	54	
2	29.171	29.266	29.302	29.246	64	60	58	66	64	62	64.0	67	61	.569	.465	.422	44	
3	29.372	29.353	29.336	29.354	60	65	65	62	73	68	67.7	74	58	.491	.510	.517	59	
4	29.428	29.380	29.361	29.390	68	70	62	71	74	70	71.7	77	66	.644	.673	.445	74	
5	29.482	29.490	29.487	29.486	56	61	58	62	74	63	66.3	76	61	.369	.363	.415	34	
6	29.517	29.407	29.248	29.391	55	67	71	60	79	75	71.3	85	55	.367	.501	.704	54	
7	29.273	29.290	29.345	29.303	70	72	60	73	78	65	72.0	80	65	.693	.701	.457	69	
8	29.392	29.338	29.284	29.338	59	66	63	62	71	65	66.0	74	58	.460	.572	.543	54	
9	29.421	29.455	29.454	29.443	60	59	55	66	72	61	66.3	74	57	.438	.327	.354	44	
10	29.492	29.402	29.288	29.394	54	62	58	58	77	67	64.0	79	53	.365	.356	.363	34	
11	29.269	29.245	29.231	29.248	60	66	63	63	76	66	68.3	78	58	.472	.505	.435	52	
12	29.236	29.235	29.170	29.247	61	67	56	64	72	59	65.0	76	59	.497	.595	.402	59	
13	29.342	29.404	29.435	29.394	48	57	51	58	65	57	60.0	66	48	.203	.359	.285	24	
14	29.468	29.436	29.405	29.436	49	58	53	52	68	57	59.0	69	47	.302	.350	.354	34	
15	29.413	29.356	29.360	29.376	51	57	56	54	64	59	59.0	64	49	.325	.373	.402	34	
16	29.307	29.240	29.502	29.350	55	57	56	56	59	58	57.7	60	55	.420	.439	.422	44	
17	29.270	29.251	29.239	29.253	57	64	57	59	70	63	64.0	73	52	.439	.516	.386	44	
18	29.266	29.225	29.188	29.226	57	65	61	64	72	67	67.7	73	58	.373	.524	.457	44	
19	29.156	29.087	29.032	29.092	58	61	61	64	63	62	63.0	71	59	.403	.510	.523	44	
20	29.254	29.305	29.313	29.291	62	66	66	65	72	69	68.7	74	57	.516	.559	.569	54	
21	29.419	29.418	29.386	29.408	60	68	61	63	75	68	68.7	78	59	.478	.591	.462	54	
22	29.469	29.478	29.499	29.482	58	66	59	63	75	63	67.0	77	61	.416	.519	.447	44	
23	29.517	29.438	29.396	29.450	56	64	63	60	71	68	66.3	73	56	.396	.503	.508	42	
24	29.447	29.417	29.386	29.417	57	65	64	60	79	68	69.0	81	58	.426	.431	.543	44	
25	29.218	29.094	29.071	29.128	70	71	65	75	80	70	75.0	81	63	.666	.637	.550	64	
26	29.188	29.233	29.263	29.228	63	68	66	67	73	69	69.7	75	63	.522	.612	.399	54	
27	29.303	29.279	29.235	29.272	66	70	68	69	82	72	74.3	82	63	.599	.572	.631	64	
28	29.235	29.272	29.178	29.228	69	70	68	72	77	71	73.3	79	68	.668	.629	.644	68	
29	29.334	29.373	29.428	29.378	62	67	57	65	72	62	66.3	74	60	.516	.595	.399	54	
30	29.575	29.591	29.622	29.599	54	58	56	57	70	58	61.7	72	55	.378	.323	.422	34	
31	29.681	29.627	29.604	29.637	49	61	59	51	79	65	65.0	81	43	.321	.296	.420	34	
Means....	29.363	29.341	29.329	29.344	.....	.....	.....	62.8	72.7	64.6	.....	.....	.....	.463	.500	.472	44	
August 1	29.663	29.571	29.610	29.615	64	73	68	69	85	74	76.0	86	58	.529	.650	.604	54	
2	29.623	29.587	29.558	29.589	69	74	71	73	83	75	77.0	85	64	.655	.718	.704	62	
3	29.548	29.489	29.508	29.515	71	74	71	76	82	75	77.7	83	73	.691	.731	.704	72	
4	29.520	29.464	29.456	29.480	71	76	64	74	80	68	74.0	83	66	.718	.843	.543	70	
5	29.514	29.464	29.461	29.480	62	70	65	65	80	70	71.7	81	61	.516	.598	.550	55	
6	29.253	29.078	29.015	29.149	69	72	69	73	76	72	73.7	81	63	.655	.731	.668	65	
7	29.126	29.185	29.234	29.182	59	65	58	64	72	65	67.0	74	60	.433	.524	.389	44	
8	29.358	29.385	29.408	29.384	61	66	62	67	72	67	68.7	77	58	.457	.559	.489	52	
9	29.472	29.389	29.293	29.385	60	65	62	62	82	69	71.0	84	54	.491	.390	.462	44	
10	29.103	29.060	29.154	29.106	66	72	61	67	74	65	68.7	78	64	.626	.757	.483	62	
11	29.242	29.274	29.332	29.283	55	57	56	58	61	60	59.7	67	58	.393	.412	.396	40	
12	29.405	29.383	29.390	29.393	55	57	52	57	69	55	60.3	75	55	.407	.306	.349	34	
13	29.470	29.453	29.412	29.445	52	62	59	55	73	62	63.3	76	43	.349	.409	.460	40	
14	29.422	29.344	29.343	29.370	53	70	61	58	84	69	70.3	85	51	.336	.545	.430	43	
15	29.346	29.297	29.278	29.307	60	69	69	64	83	71	72.7	84	54	.465	.530	.682	55	
16	29.354	29.363	29.409	29.375	61	63	56	64	73	63	66.7	74	60	.497	.442	.356	42	
17	29.480	29.462	29.444	29.462	56	63	53	59	77	61	65.7	78	53	.409	.329	.297	35	
18	29.450	29.427	29.401	29.426	52	62	59	55	79	66	66.7	81	48	.349	.329	.393	35	
19	29.416	29.395	29.338	29.383	62	69	67	68	76	71	71.7	77	55	.476	.614	.608	56	
20	29.333	29.313	29.218	29.288	68	69	66	73	73	71	72.3	78	64	.612	.655	.572	61	
21	29.181	29.151	29.179	29.170	66	67	57	70	70	63	67.7	75	63	.586	.622	.386	53	
22	29.255	29.214	29.235	29.235	52	54	51	56	61	56	57.3	64	52	.335	.325	.308	32	
23	29.315	29.334	29.383	29.344	50	52	45	56	61	50	55.7	64	49	.282	.269	.234	28	
24	29.556	29.551	29.534	29.547	50	55	55	54	66	60	60.0	67	45	.308	.287	.367	32	
25	29.599	29.555	29.546	29.567	55	62	59	63	72	64	66.3	72	52	.327	.422	.433	34	
26	29.536	29.450	29.428	29.471	59	67	64	64	74	67	68.3	75	61	.433	.568	.556	51	
27	29.412	29.445	29.465	29.441	56	59	52	62	72	56	63.3	72	56	.369	.397	.335	34	
28	29.515	29.425	29.435	29.458	54	60	49	57	72	53	60.7	74	46	.378	.358	.295	34	
29	29.469	29.432	29.532	29.478	57	64	57	63	77	60	66.7	78	40	.386	.422	.426	41	
30	29.551	29.511	29.533	29.532	62	73	68	70	85	73	76.0	86	65	.449	.623	.618	53	
31	29.555	29.517	29.475	29.516	69													

the northern and northwestern lakes, at Buffalo, New York.

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decim.	Am't of rain or melted snow, in U. S. inches and decim.	
Humidity. Saturation = 1.000.				Direction. From whence.			Velocity, in miles, per hour.		Resultant velocity, in miles, per hour.	Resultant direction.						
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.			9 p. m.			7 a. m.	2 p. m.	9 p. m.
895	548	745	796	SW....	SW....	NW....	12	2	12	6.3	S. 85 W.	10	9	10		
891	780	772	814	W. SW.	W. SW.	W....	12	45	12	22.7	S. 72 W.	10	10	2		.46
884	929	843	885	W. SW.	W. SW.	W. SW.	4	25	4	11.0	S. 68 W.	1	1	10		
850	810	613	758	W. SW.	W. SW.	NW....	4	12	4	6.0	S. 80 W.	10	10	10		
665	433	723	607	NW....	N. NW.	SE....	2	4	2	1.9	N. 49 E.	10	9	7		
708	506	812	675	NE....	SW....	W. SW.	2	2	12	4.0	S. 68 W.	10	10	10		
854	734	731	773	W. SW.	W. SW.	NW....	4	12	2	5.7	S. 74 W.	10	7	7		
828	754	890	824	SW....	W. SW.	W....	2	4	4	3.1	S. 79 W.	10	10	0		
685	417	659	587	NW....	N. NW.	NE....	4	12	2	5.7	N. 21 W.	6	9	10		
756	384	550	563	NE....	W. SW.	S....	2	2	4	1.0	S. 8 W.	10	10	10		
831	563	700	698	SW....	W. SW.	W. SW.	2	2	2	2.0	S. 59 W.	9	7	1		.16
733	758	819	803	SW....	SW....	NW....	4	4	12	5.0	N. 79 W.	10	10	10		
421	582	634	549	W. by N	NW....	NW....	12	12	2	8.3	N. 61 W.	3	10	1		
794	511	752	686	NW....	SW....	W....	2	12	2	4.7	S. 58 W.	1	9	2		
802	625	819	749	NE....	NW....	NE....	2	2	2	1.5	N. 19 E.	10	10	10		
935	878	876	896	NE....	NE....	NE....	2	4	2	2.7	N. 45 E.	10	10	10		.20
878	704	670	751	N. NW.	SW....	W. by S.	2	4	2	2.0	S. 77 W.	9	9	0		.08
625	668	690	661	W. SW.	W. SW.	W. SW.	4	35	12	17.0	S. 68 W.	9	9	0		
675	886	942	834	S....	W. SW.	W. SW.	4	2	2	2.2	S. 33 W.	10	10	10		
836	712	846	798	W. SW.	W. SW.	W. SW.	12	25	12	16.3	S. 68 W.	7	9	2		.34
831	681	653	722	NE....	S. SW.	NE....	2	4	4	0.9	N. 79 W.	9	10	10		
723	599	776	699	NE....	NE....	NE....	12	4	2	6.0	N. 45 W.	10	9	0		
765	663	743	724	NW....	W. SW.	W. SW.	2	12	12	8.3	S. 72 W.	10	4	10		
822	434	793	683	NE....	W....	NE....	2	2	2	1.0	N. 15 E.	10	9	4		
768	623	751	714	W. SW.	W. SW.	W. SW.	12	35	35	27.0	S. 68 W.	9	10	7		
790	761	846	799	W. SW.	W. SW.	W. SW.	35	35	35	35.0	S. 67 W.	6	9	4		.02
846	524	804	725	W. SW.	SW....	SW....	2	2	2	2.0	S. 52 W.	10	8	1		
852	689	850	799	SW....	SW....	W. SW.	2	2	2	2.0	S. 52 W.	9	10	10		
836	758	718	771	W. SW.	SW....	NW....	2	2	2	1.7	S. 81 W.	10	10	1		.22
812	441	826	693	NE....	NE....	NE....	4	4	2	3.3	N. 45 E.	2	1	0		
859	300	680	613	NE....	SW....	NE....	2	2	2	0.7	N. 45 E.	0	0	0		
791	634	769	731							5.6	S. 74 W.	8.0	8.3	5.4		1.48
747	540	720	669	S. SE..	W. SW.	S....	2	2	12	4.7	S. 4 W.	4	9	1		
807	636	812	752	SE....	W. SW.	W. SW.	2	2	2	1.3	S. 35 W.	10	7	6		
771	669	812	751	S. SE..	W. SW.	W. SW.	4	4	2	2.4	S. 34 W.	7	5	10		
856	824	793	824	NE....	NW....	NE....	2	4	2	1.9	North..	8	10	10		
836	585	750	724	NE....	SW....	SE....	2	2	2	0.7	S. 45 E.	9	5	1		.12
807	850	852	836	S....	W. SW.	W. SW.	4	12	12	8.7	S. 59 W.	10	10	1		
727	668	631	675	W. SW.	W. SW.	NE....	12	35	2	15.0	S. 69 W.	10	9	1		.16
690	712	740	714	W. SW.	SW....	W. SW.	2	4	2	2.7	S. 54 W.	6	10	1		
884	357	653	631	SW....	SW....	NE....	2	2	2	0.7	S. 45 W.	2	9	10		
946	903	783	877	S. by W.	SW....	W. SW.	12	12	4	9.0	S. 63 W.	10	10	1		.22
816	769	765	783	NW....	NW....	NW....	4	4	4	4.0	N. 45 W.	10	10	10		.18
874	432	805	704	N. NW.	N. NW.	W. NW.	2	2	2	2.0	N. 38 W.	10	1	0		
805	504	828	712	E. SE..	W. SW.	NE....	2	4	2	0.3	S. 27 E.	0	1	0		
698	468	607	591	W. NW.	SW....	E. SE..	2	2	2	0.7	S. 45 W.	2	0	0		
780	461	899	713	E. SE..	W....	W. SW.	2	2	2	0.8	S. 52 W.	1	2	0		
833	545	619	666	N....	N....	N. NW.	4	4	2	3.0	N. 5 W.	10	9	0		
819	419	553	597	NE....	NE....	NE....	2	2	4	2.7	N. 45 E.	0	0	0		
805	322	595	574	E....	W. SW.	W. SW.	2	2	2	2.8	S. 45 W.	2	1	0		
695	685	802	727	SW....	SW....	SW....	4	12	12	9.3	S. 45 W.	10	7	7		
761	807	754	774	SW....	NW....	W. SW.	4	12	12	7.3	N. 87 W.	8	10	10		
799	848	670	772	SW....	SW....	N. NW.	4	4	12	5.3	S. 86 W.	9	10	10		
747	606	687	680	NE....	NE....	NE....	12	4	2	6.0	N. 45 E.	10	10	1		.14
627	502	646	592	N. NW.	NW....	NW....	4	12	2	6.0	N. 41 W.	2	8	0		
738	450	708	632	N. NW.	W. SW.	SW....	2	4	4	2.7	S. 72 W.	2	8	9		
568	539	727	611	S. SW..	SW....	SW....	2	4	12	6.0	S. 42 W.	1	1	0		
727	677	841	748	W....	W....	SW....	4	12	4	6.3	S. 83 W.	0	4	1		
665	417	747	610	N. NW.	NW....	NW....	2	4	2	2.6	N. 40 W.	10	9	0		
812	457	733	667	NE....	SW....	SW....	2	4	2	1.3	S. 45 W.	5	9	0		
670	456	822	649	S....	SW....	SW....	2	2	2	1.7	S. 29 W.	0	4	0		
613	535	761	636	S. SW..	SW....	SW....	2	2	2	2.0	S. 38 W.	9	7	0		
852	636	900	696	W....	W....	SW....	2	2	2	1.9	S. 75 W.	0	7	10		
767	589	752	703							2.7	S. 75 W.	5.7	6.8	3.2		.82

*Reductions of the monthly meteorological register of the survey of*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
Sept.	1	29.438	29.380	29.385	29.401	71	72	69	75	74	72	71.7	76	70	704	757	688	714
	2	29.343	29.273	29.293	29.303	68	75	63	69	88	69	75.3	90	66	671	692	495	606
	3	29.338	29.307	29.315	29.320	72	76	70	75	79	72	75.3	80	66	744	856	706	734
	4	29.388	29.362	29.335	29.362	73	75	70	75	81	72	76.0	82	63	784	787	706	724
	5	29.318	29.284	29.301	29.301	73	75	69	75	80	70	75.0	81	71	784	800	625	724
	6	29.318	29.268	29.297	29.294	60	69	64	62	75	67	68.0	76	61	491	628	536	574
	7	29.333	29.295	29.306	29.311	66	72	64	69	76	68	71.0	77	66	599	731	543	624
	8	29.256	29.168	29.241	29.222	60	65	68	64	67	70	67.0	76	61	465	591	654	574
	9	29.283	29.338	29.378	29.333	71	69	68	73	75	71	73.0	78	66	731	622	644	694
	10	29.436	29.359	29.292	29.362	66	76	74	68	82	77	75.3	83	66	612	816	739	724
	11	29.255	29.290	29.331	29.292	73	73	67	76	74	70	73.3	79	68	771	792	622	724
	12	29.472	29.454	29.485	29.470	60	68	66	62	84	71	72.3	85	57	491	470	572	514
	13	29.543	29.513	29.502	29.519	69	77	74	73	88	77	79.3	89	66	655	778	739	724
	14	29.510	29.422	29.420	29.451	71	76	71	74	81	74	76.3	81	72	771	822	718	724
	15	29.548	29.575	29.616	29.580	63	60	56	67	76	64	69.0	77	63	522	305	343	384
	16	29.657	29.550	29.486	29.564	56	65	64	60	78	68	68.3	79	50	396	443	329	424
	17	29.391	29.323	29.332	29.349	64	66	60	70	69	62	67.0	80	62	516	599	491	534
	18	29.406	29.493	29.528	29.476	48	50	46	49	54	48	50.3	63	47	322	308	224	306
	19	29.638	29.602	29.590	29.610	45	55	53	48	62	59	56.3	63	49	260	340	323	306
	20	29.595	29.531	29.464	29.530	50	61	62	53	70	65	62.7	71	47	321	416	516	414
	21	29.504	29.501	29.511	29.505	62	66	64	65	70	66	67.0	72	63	516	586	569	554
	22	29.540	29.547	29.538	29.542	58	69	64	59	73	67	66.3	74	58	469	655	536	564
	23	29.604	29.547	29.521	29.557	59	69	63	61	79	66	68.7	80	60	473	574	536	524
	24	29.486	29.413	29.343	29.414	64	68	68	68	73	69	70.0	78	63	543	618	671	614
	25	29.354	29.363	29.424	29.380	61	59	57	65	69	61	65.0	71	60	483	367	412	424
	26	29.591	29.584	29.633	29.603	48	59	47	51	65	50	55.3	67	45	296	420	283	324
	27	29.704	29.681	29.667	29.684	44	58	56	46	70	60	58.7	74	41	262	323	336	324
	28	29.691	29.627	29.597	29.638	49	63	57	51	73	60	61.3	73	48	321	442	426	394
	29	29.558	29.445	29.336	29.446	50	65	61	52	76	68	65.3	77	51	334	470	443	416
	30	29.330	29.284	29.240	29.285	57	58	57	59	61	59	59.7	69	58	439	443	439	444
Means....		29.461	29.426	29.423	29.437	....	....	....	63.8	74.1	66.4	68.1	....	....	525	582	546	554
Oct.	1	29.174	29.084	29.090	29.116	55	57	52	61	65	55	60.3	68	50	354	359	349	354
	2	29.186	29.213	29.278	29.226	46	48	44	49	54	48	50.3	58	39	271	256	236	254
	3	29.266	29.198	29.206	29.223	43	48	42	45	52	45	47.3	55	40	251	282	228	254
	4	29.247	29.196	29.228	29.224	39	44	41	41	45	44	43.3	47	39	212	275	218	235
	5	29.354	29.413	29.498	29.422	43	46	42	46	50	44	46.7	50	42	238	258	241	246
	6	29.571	29.565	29.528	29.555	45	52	49	47	57	52	52.0	59	45	273	322	308	301
	7	29.425	29.364	29.314	29.368	52	60	59	57	65	61	61.0	67	51	322	451	473	415
	8	29.317	29.355	29.335	29.336	50	54	50	60	56	53	56.3	64	53	239	391	321	314
	9	29.342	29.288	29.292	29.307	56	62	60	58	67	62	62.3	67	47	422	489	491	467
	10	29.366	29.333	29.395	29.365	62	66	55	64	69	57	63.3	69	58	529	599	407	512
	11	29.423	29.324	29.199	29.315	49	60	61	54	65	63	60.7	66	51	282	451	510	414
	12	29.436	29.466	29.468	29.457	41	40	40	45	45	44	44.7	64	41	205	182	195	194
	13	29.495	29.393	29.344	29.411	36	49	39	38	54	42	44.7	54	38	186	282	199	222
	14	29.160	29.020	28.978	29.053	34	51	46	36	59	48	47.7	60	33	170	269	224	241
	15	28.954	29.038	29.134	29.042	43	43	40	46	48	46	46.7	61	43	238	212	189	206
	16	29.342	29.386	29.438	29.389	36	42	39	39	45	44	42.7	47	37	173	228	173	191
	17	29.477	29.373	29.298	29.383	33	47	44	34	54	48	45.3	55	33	175	231	236	214
	18	29.123	29.052	28.993	29.056	46	55	52	50	58	54	54.0	57	46	258	393	322	324
	19	28.788	28.583	28.578	28.650	51	49	48	52	50	52	51.7	56	48	361	335	282	326
	20	28.817	28.853	29.004	28.891	38	43	38	41	47	42	43.3	53	39	190	225	177	197
	21	29.228	29.312	29.424	29.321	35	38	39	37	43	42	40.7	46	35	178	164	199	189
	22	29.535	29.435	29.355	29.441	36	46	47	38	53	53	48.0	54	33	186	219	244	216
	23	29.514	29.561	29.615	29.563	40	41	32	42	47	34	41.0	53	33	221	179	135	186
	24	29.671	29.651	29.638	29.653	25	41	31	26	47	33	35.3	48	24	123	179	151	151
	25	29.647	29.555	29.486	29.563	34	43	40	37	53	45	45.0	54	26	157	146	182	182
	26	29.507	29.504	29.545	29.519	38	39	33	41	42	34	39.0	47	33	190	199	173	182
	27	29.483	29.383	29.218	29.361	34	33	36	35	34	37	35.3	37	33	183	175	199	182
	28	28.987	29.012	29.123	29.074	40	41	34	41	43	35	39.7	46	33	235	231	183	216
	29	29.466	29.482	29.570	29.506	28	38	36	30	43	40	37.7	45	28	130	164	160	151
	30	29.758	29.688	29.610	29.685	35	43	37	37	49	40	42.0	50	35	178	199	181	182
	31	29.559	29.559	29.612	29.577	41	42	40	44	44	43	43.7	48	3				

*The northern and northwestern lakes, at Buffalo, New York.*

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimls.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
.812	.903	.852	.856	W. SW	E. SE	SE	2	2	2	1.1	S. 23 E.	10	10	10		
.947	.523	.700	.723	SE	SW	SW	2	2	2	1.2	S. 19 W.	10	9	0		.16
.858	.865	.900	.874	S. SW	SW	SW	2	2	2	2.0	S. 40 W.	10	4	0		
.904	.744	.909	.849	W. SW	SW	SW	4	4	2	2.3	S. 54 W.	10	4	0		
.904	.782	.948	.878	W. SW	W	NW	2	4	2	2.3	N. 85 W.	10	10	6		
.884	.724	.841	.816	N. NW	W	W	2	2	4	2.3	N. 75 W.	10	0	9		.24
.846	.815	.793	.818	S. SW	SW	SW	4	2	2	3.3	S. 36 W.	9	6	10		
.780	.893	.898	.857	NE	NE	E	4	4	2	3.2	N. 54 E.	10	10	1		
.902	.724	.850	.825	E. SE	SW	W. NW	2	4	2	1.3	S. 45 W.	9	10	10		.72
.895	.747	.862	.835	NE	SW	NE	2	2	2	0.7	N. 45 E.	10	5	10		
.860	.951	.848	.886	SW	SW	W. SW	12	4	12	7.0	S. 56 W.	10	9	0		
.884	.403	.754	.680	SE	S. SE	NE	2	2	2	1.3	S. 64 E.	3	0	0		.56
.807	.588	.862	.752	S. by E	W. SW	SE	4	4	2	2.3	S. 12 W.	4	5	4		
.860	.784	.856	.833	S. SE	SW	W. SW	2	4	12	5.3	S. 55 W.	6	9	6		.04
.790	.340	.575	.568	NW	NW	NW	12	2	2	5.3	N. 45 W.	1	0	0		.02
.765	.463	.747	.658	NE	NW	W. SW	2	2	2	0.9	N. 42 W.	0	2	0		
.704	.846	.884	.811	W. SW	NW	NE	12	25	25	11.0	N. 21 W.	2	10	10		
.926	.738	.850	.838	NE	NE	NE	12	12	4	9.3	N. 45 E.	10	10	0		.58
.777	.612	.647	.679	E	SW	SW	2	12	4	5.0	S. 41 W.	0	0	0		
.798	.570	.836	.735	S. SE	SW	SW	2	12	12	8.3	S. 42 W.	2	10	3		
.836	.799	.891	.842	SW	SW	SW	12	12	2	8.7	S. 45 W.	2	10	8		
.939	.807	.841	.862	E. by N	SW	NE	2	2	2	0.7	N. 79 E.	10	10	2		
.882	.580	.838	.767	E. NE	S. SW	N	2	2	2	0.4	N. 45 E.	9	3	0		
.793	.761	.947	.834	S	SW	SW	12	25	25	19.7	S. 37 W.	8	10	10		
.783	.518	.769	.690	NW	NW	NW	12	12	4	9.3	N. 45 W.	10	5	0		1.16
.790	.680	.786	.753	NE	NE	NE	2	4	4	3.3	N. 45 E.	1	0	0		
.843	.441	.765	.683	NE	NW	NE	2	2	2	1.2	N. 19 E.	0	0	0		
.859	.545	.822	.742	SE	S. SW	NE	2	2	2	0.9	S. 48 E.	0	2	2		
.861	.524	.647	.671	E. SE	SW	SW	2	2	12	4.7	S. 39 W.	10	9	1		
.878	.825	.878	.860	SW	W. SW	SW	2	4	12	6.0	S. 49 W.	10	10	7		0.4
.845	.683	.819	.782							2.0	S. 65 W.	6.5	6.1	3.6		3.52
.659	.582	.805	.682	W. SW	NW	N. NW	25	35	25	23.0	N. 56 W.	8	10	10		.04
.781	.613	.704	.699	NW	W. NW	N. NW	12	2	12	8.3	N. 35 W.	3	10	10		.26
.840	.727	.762	.776	NW	NW	NW	4	12	12	9.3	N. 45 W.	9	10	10		
.824	.920	.756	.833	N. NW	NW	NW	4	4	12	6.7	N. 38 W.	10	10	5		
.767	.716	.836	.773	NW	NW	N. NW	12	12	12	12.0	N. 37 W.	9	10	5		.18
.847	.692	.794	.778	W. NW	W. SW	SW	2	4	12	5.6	S. 56 W.	9	2	0		
.692	.731	.822	.768	SW	SW	S. SW	12	35	35	26.7	S. 35 W.	10	10	10		
.442	.872	.798	.704	W	W. NW	W. NW	2	2	2	2.0	N. 74 W.	10	10	6		.82
.876	.740	.884	.833	SW	SW	SW	4	25	12	13.7	S. 45 W.	5	6	0		
.888	.846	.874	.869	SW	SW	S. SW	12	12	2	8.3	S. 43 W.	0	2	8		
.674	.731	.886	.764	E. NE	SW	W. SW	4	4	12	4.0	S. 61 W.	10	1	10		
.684	.607	.677	.656	W. SW	N. NW	NE	4	12	2	4.3	N. 31 W.	10	10	3		
.811	.674	.744	.743	NE	NE	N	2	2	4	2.5	N. 23 E.	2	9	1		
.802	.537	.850	.730	E. NE	NE	NE	2	2	2	2.0	N. 52 E.	3	9	8		
.767	.631	.543	.647	NE	N. NE	N. NE	4	12	25	13.7	N. 25 E.	10	10	10		
.726	.762	.597	.695	NW	NW	NW	12	4	12	9.3	N. 45 W.	10	10	2		
.895	.552	.704	.717	E. SE	SE	E. SE	2	2	2	2.0	S. 59 E.	10	10	10		
.716	.816	.867	.799	SE	SE	SE	2	2	2	2.0	S. 45 E.	10	10	10		
.930	.927	.727	.861	SW	W. NW	NW	2	35	35	23.0	N. 58 W.	10	10	10		.48
.738	.698	.661	.699	W. NW	W. NW	NW	12	45	12	22.7	N. 64 W.	2	0	1		.08
.807	.587	.744	.713	NW	NW	NW	4	25	12	13.7	N. 45 W.	6	10	10		.02
.811	.544	.606	.654	SE	W. SW	SW	4	25	4	9.3	S. 57 W.	10	4	10		
.829	.554	.792	.725	NW	NW	NE	2	4	2	2.1	N. 27 W.	9	6	0		
.876	.554	.800	.743	NE	NE	NE	2	4	2	2.7	N. 45 E.	0	8	0		
.712	.363	.607	.561	NE	NE	NE	2	2	4	2.7	N. 45 E.	4	9	10		
.738	.744	.895	.792	NE	NE	NE	2	35	25	20.7	N. 45 E.	10	10	10		
.898	.895	.903	.899	NE	NE	NE	12	25	25	20.7	N. 45 E.	10	10	10		.28
.912	.833	.898	.881	N. NW	SW	NW	2	35	25	14.7	S. 83 W.	10	10	10		.50
.782	.587	.645	.671	N. NW	NW	N. NW	4	12	4	6.3	N. 37 W.	10	9	10		.48
.807	.572	.732	.704	SE	SW	SW	2	2	2	1.5	S. 19 W.	10	10	10		
.756	.836	.750	.781	S	W. SW	NW	2	12	2	4.7	S. 66 W.	10	10	10		.02
.783	.693	.765	.747							4.0	N. 48 W.	7.7	8.4	7.0		3.16



Reductions of the monthly meteorological register of the survey

Date.		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
						Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
						7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1865.						°	°	°	°	°	°	°	°	°					
Nov.	1	29.644	29.601	29.361	29.542	40	46	42	42	51	47	46.7	52	40		221	245	222	228
	2	29.301	29.348	29.422	29.357	49	43	40	51	48	43	47.3	56	42		321	212	207	247
	3	29.485	29.418	29.316	29.406	33	44	41	34	48	45	42.3	50	32		175	236	205	245
	4	29.205	29.068	28.880	29.051	37	44	41	38	48	44	43.3	50	35		207	236	218	224
	5	29.131	29.311	29.393	29.288	31	31	29	32	32	31	31.7	45	31		162	162	137	154
	6	29.205	29.004	29.235	29.148	32	36	34	34	42	38	38.0	43	29		155	134	144	144
	7	29.641	29.736	29.789	29.722	25	27	23	28	30	25	27.7	40	25		100	113	100	124
	8	29.726	29.539	29.346	29.537	29	37	42	30	44	49	41.0	50	23		149	124	175	149
	9	29.545	29.646	29.680	29.624	36	39	33	38	45	36	39.7	51	36		186	166	142	165
	10	29.916	29.969	29.999	29.961	27	26	27	30	29	29	29.3	37	28		113	106	124	114
	11	30.007	29.921	29.847	29.925	24	32	25	26	37	26	29.7	38	27		106	116	123	115
	12	29.783	29.676	29.554	29.671	32	40	43	35	45	46	42.0	47	23		142	122	222	187
	13	29.484	29.391	29.311	29.395	43	48	45	46	51	47	48.0	52	45		238	226	273	229
	14	29.321	29.263	29.208	29.264	44	48	42	47	54	48	49.7	55	46		249	256	182	221
	15	29.278	29.263	29.288	29.276	43	51	46	48	54	48	50.0	56	44		212	135	224	199
	16	29.341	29.269	29.167	29.259	44	54	48	47	63	56	55.3	66	46		249	228	230	229
	17	29.100	29.150	29.369	29.206	54	50	40	59	55	44	52.7	61	43		351	225	128	222
	18	29.492	29.490	29.435	29.472	37	37	36	39	40	38	39.0	45	37		191	181	186	157
	19	29.562	29.564	29.595	29.574	36	40	32	39	46	34	39.7	47	33		173	162	155	19
	20	29.569	29.431	29.368	29.456	27	41	34	29	47	37	37.7	48	28		124	179	157	123
	21	29.270	29.144	29.073	29.162	38	40	34	40	42	35	39.0	43	33		203	221	123	222
	22	28.898	28.886	28.903	28.896	32	33	34	33	34	35	34.0	39	31		162	175	183	175
	23	29.080	29.218	29.163	29.154	35	36	37	36	37	39	37.3	39	33		191	199	194	197
	24	29.425	29.492	29.495	29.471	37	37	36	38	39	38	38.7	42	36		207	194	186	19
	25	29.425	29.382	29.387	29.398	36	41	39	38	43	41	40.7	44	35		186	231	212	216
	26	29.475	29.422	29.370	29.432	37	39	36	38	43	40	40.3	44	38		207	186	160	194
	27	29.308	29.363	29.473	29.381	34	32	30	37	35	31	34.3	42	30		157	142	155	151
	28	29.554	29.536	29.471	29.520	26	29	26	27	30	28	28.3	41	26		129	149	117	122
	29	29.324	29.280	29.230	29.278	26	33	32	27	36	36	33.0	39	25		129	149	129	126
	30	29.095	28.776	28.702	28.858	35	38	37	38	45	39	40.7	47	34		165	138	194	166
Means....		29.420	29.388	29.361	29.389	....	....	....	37.5	43.1	39.1	39.9	....	....		185	187	182	157
Dec.	1	28.842	28.976	29.101	28.976	30	32	29	33	34	32	33.0	42	31		132	155	126	136
	2	29.078	29.954	29.028	29.020	32	42	44	33	46	48	42.7	50	31		168	215	236	206
	3	29.362	29.368	29.354	29.361	41	48	45	43	52	46	47.0	53	39		231	222	226	226
	4	29.278	29.386	29.537	29.400	53	45	39	53	49	41	47.7	57	42		403	247	212	227
	5	29.764	29.708	29.763	29.745	26	31	30	28	33	31	30.7	44	27		117	151	155	141
	6	29.581	29.472	29.296	29.450	30	37	29	32	39	30	33.7	40	27		144	194	149	162
	7	28.963	29.058	29.455	29.159	33	35	22	34	37	23	31.3	38	23		175	172	107	153
	8	29.629	29.651	29.694	29.658	24	32	26	25	32	27	28.0	34	21		117	181	129	142
	9	29.481	29.245	29.165	29.297	28	32	34	29	34	34	32.7	39	22		142	155	126	164
	10	29.250	29.165	29.155	29.190	33	36	33	36	38	38	37.3	40	30		149	186	123	152
	11	29.314	29.276	29.252	29.281	38	44	37	42	49	39	43.3	49	38		177	223	194	196
	12	29.148	29.065	29.128	29.114	44	53	46	48	57	49	51.3	58	38		236	350	271	226
	13	29.672	29.644	29.653	29.656	23	24	19	24	27	20	23.7	50	20		112	995	922	100
	14	29.593	29.621	29.624	29.579	15	12	11	16	13	12	13.7	23	11		074	063	061	066
	15	29.634	29.595	29.586	29.605	12	16	10	12	19	11	14.0	21	8		075	056	057	063
	16	29.599	29.511	29.451	29.520	10	15	16	10	17	17	14.7	18	9		062	063	072	070
	17	29.480	29.529	29.522	29.510	20	27	23	21	29	24	24.7	31	13		096	124	112	111
	18	29.581	29.498	29.255	29.445	27	32	36	28	33	38	33.0	38	24		136	168	126	163
	19	29.017	28.967	29.163	29.039	42	39	31	43	41	35	39.7	44	34		254	212	124	198
	20	29.460	29.279	28.853	29.197	19	24	19	23	25	20	22.7	39	19		052	117	092	082
	21	29.073	29.317	29.465	29.285	15	20	18	16	22	19	19.0	37	14		074	085	027	022
	22	29.461	29.591	29.768	29.607	12	30	12	13	32	14	19.7	32	11		063	144	052	030
	23	29.861	29.701	29.574	29.712	11	25	10	13	28	12	17.7	29	9		049	100	046	065
	24	29.108	28.998	28.900	29.002	32	34	34	33	37	36	35.3	38	11		168	157	170	165
	25	29.085	29.184	29.233	29.169	36	39	34	38	42	35	38.3	43	35		186	199	183	189
	26	29.200	29.113	28.989	29.101	34	45	43	36	50	44	43.3	51	30		170	234	264	223
	27	29.010	29.378	29.520	29.303	36	34	33	36	37	36	36.3	45	33		212	157	149	173
	28	29.443	29.415	29.471	29.443	30	33	31	31	34	32	32.3	39	30		155	175	162	164
	29	29.701	29.761	29.752	29.738	27	25	22	28	28	24	26.7	37	23		136	100	095	110
	30	29.570	29.488	29.577	29.545	22	31	20	23	33	22	26.0	34	20		107	151	085	114
	31	29.617	29.418	29.420	29.485	20	33	34	21	37	36	31.3	40	18		096	136	170	134
Means....		29.382	29.365	29.377	29.374	....	....	....	29.1	34.7	29.8	31.2	....	....		144	163	143	130

*On the northern and northwestern lakes, at Buffalo, New York.*

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.829	.653	.624	.702	SE.....	SW.....	E. SE....	2	4	12	4.3	S. 48 E.	10	10	10		.32
.859	.631	.750	.747	W. SW.	W. SW.	NW.....	12	35	4	16.3	S. 72 W.	10	10	10		.02
.895	.704	.684	.761	SE.....	SW.....	SW.....	2	2	2	1.5	S. 19 W.	3	10	3		
.905	.704	.756	.788	S. SE....	W. SW.	W. SW.	2	4	35	13.0	S. 65 W.	10	10	10		
.896	.896	.788	.860	NW.....	NW.....	NW.....	12	25	4	13.7	N. 45 W.	10	10	8		.04
.792	.500	.628	.640	SW.....	W. SW.	W. SW.	25	60	35	39.7	S. 62 W.	10	10	10		
.655	.675	.746	.692	N.....	NW.....	E by N.	4	4	2	2.3	N. 6 W.	10	8	0		
.890	.446	.505	.614	S. SE....	SW.....	W. SW.	4	12	35	15.7	S. 57 W.	10	10	10		
.811	.533	.705	.683	W.....	N by W.	NW.....	4	12	4	6.3	N. 74 W.	0	3	10		
.675	.655	.775	.702	N.....	NE.....	NE.....	4	4	4	3.7	N. 28 E.	10	10	10		
.754	.527	.876	.719	NE.....	NE.....	NE.....	4	2	2	2.7	N. 45 E.	10	9	1		
.698	.607	.767	.691	W. SW.	SW.....	SW.....	4	25	12	13.3	S. 47 W.	10	10	1		
.767	.790	.847	.801	W. SW.	W. SW.	W. SW.	12	12	12	12.0	S. 68 W.	10	10	1		
.772	.613	.563	.649	SW.....	W. SW.	SE.....	4	12	2	5.0	S. 55 W.	10	0	1		
.631	.802	.850	.761	SW by S	W. SW.	SE.....	4	4	2	2.7	S. 34 W.	10	8	0		
.772	.519	.512	.601	S.....	S. SW.	SE.....	2	2	2	1.7	S. 7 E.	10	5	0		
.703	.681	.677	.687	S.....	W. SW.	NW.....	12	25	2	10.7	S. 50 W.	10	2	1		
.816	.732	.811	.786	N.....	NE.....	NE.....	2	4	2	2.7	N. 34 E.	10	10	6		
.726	.543	.792	.687	N. NW.	NW.....	E.....	2	2	2	1.1	N. 4 W.	2	3	1		
.775	.554	.712	.680	E. SE....	E. NE.	E. NE.	2	2	4	2.7	N. 79 E.	1	6	0		
.820	.829	.898	.849	NE.....	NE.....	NW.....	2	4	4	2.4	N. 11 E.	10	10	10		
.893	.895	.898	.895	N. NW.	NW.....	NW.....	4	12	12	9.3	N. 42 W.	10	10	10		.26
.900	.903	.816	.873	N.....	NW.....	NW.....	4	4	12	6.3	N. 37 W.	10	10	10		.24
.905	.816	.811	.844	N. NW.	N. NW.	S. SE....	4	2	4	2.0	N. 37 W.	10	10	10		.04
.811	.833	.824	.823	S.....	W by S.	NW.....	12	4	4	4.3	S. 56 W.	10	10	10		
.905	.669	.645	.740	N. NW.	NW.....	NW.....	4	2	2	2.7	N. 34 W.	10	10	10		
.712	.698	.893	.768	NW.....	NW.....	NW.....	4	45	4	17.7	N. 45 W.	6	10	4		
.880	.890	.768	.846	N. NW.	N. NW.	E. NE.	2	2	2	1.2	N. 14 W.	2	10	10		.02
.880	.705	.610	.732	NE.....	SE.....	S.....	4	4	4	2.3	S. 54 E.	10	10	10		.02
.719	.459	.816	.665	S.....	S.....	SW.....	4	25	35	19.7	S. 25 W.	10	10	10		
.795	.682	.748	.742							5.2	S. 76 W.	8.5	8.5	6.2		.66
.703	.792	.694	.730	W. NW.	W. NW.	W. NW.	12	25	4	13.3	N. 68 W.	10	10	10		.10
.893	.691	.704	.763	SE.....	S.....	W. SW.	2	4	2	2.0	S. 4 W.	10	10	10		
.833	.727	.921	.827	E. NE.	NE.....	E. SE....	2	2	2	1.7	N. 74 E.	10	10	10		
1.000	.710	.824	.845	S.....	NW.....	NW.....	2	12	4	4.7	N. 48 W.	10	10	10		1.02
.768	.800	.893	.820	N. NW.	NW.....	W. SW.	2	4	2	2.2	N. 55 W.	9	5	1		.10
.794	.816	.890	.833	W. SW.	SW.....	SW.....	2	4	2	2.7	S. 40 W.	3	10	10		
.895	.807	.864	.855	NE.....	NW.....	NW.....	2	4	12	5.3	N. 38 W.	10	10	3		.04
.872	1.000	.880	.884	W. SW.	W. SW.	W. SW.	4	2	2	2.7	S. 67 W.	10	9	5		
.887	.792	1.000	.893	SE.....	S. SE....	S. SW.	2	4	25	9.7	S. 13 W.	8	10	10		
.705	.811	.537	.684	W. SW.	S.....	S. SW.	2	2	12	5.0	S. 25 W.	9	10	3		.22
.661	.628	.816	.705	S. SE....	E.....	SE.....	4	4	2	2.7	S. 50 E.	10	2	9		
.704	.752	.781	.746	S. SE....	S.....	SW.....	12	4	35	14.7	S. 27 W.	9	10	10		
.863	.644	.850	.787	NW.....	NW.....	NW.....	12	4	4	6.7	N. 45 W.	9	10	0		.08
.829	.810	.804	.814	NW.....	NW.....	W. NW.	12	12	4	9.3	N. 48 W.	2	1	0		
1.000	.541	.797	.779	W.....	W.....	W.....	4	4	2	3.3	West....	3	4	9		
1.000	.671	.831	.835	SW.....	S. SE....	E.....	2	2	2	1.2	S. 24 E.	10	10	5		
.855	.775	.868	.833	S.....	S. SW.	SW.....	2	2	2	1.9	S. 23 W.	10	10	10		
.883	.893	.811	.862	SE.....	SE.....	S.....	2	2	12	5.0	S. 11 E.	10	10	10		
.916	.824	.628	.789	W. SW.	W. SW.	NW.....	12	35	25	17.3	N. 86 W.	10	10	10		.10
.467	.872	.850	.796	NW.....	NE.....	NE.....	4	4	35	13.0	N. 39 E.	10	10	10		
.829	.721	.845	.798	NW.....	W.....	NW.....	12	12	12	11.3	N. 60 W.	7	8	10		.34
.810	.794	.635	.746	W. NW.	W.....	NW.....	12	25	12	15.3	N. 73 E.	10	10	6		
.623	.655	.610	.629	NW.....	W. SW.	NE.....	4	25	2	8.3	S. 77 W.	8	10	3		.16
.893	.712	.802	.802	SW.....	SW.....	SW.....	12	25	12	16.3	S. 45 W.	10	10	10		.02
.811	.794	.898	.834	SW.....	SW.....	E.....	25	12	2	12.0	S. 43 W.	10	8	9		
.802	.646	.918	.789	E.....	S.....	NE.....	2	2	2	1.2	S. 80 W.	10	10	10		
1.000	.712	.705	.806	NW.....	W. SW.	W. SW.	4	2	2	2.2	N. 79 W.	10	10	10		.72
.893	.895	.896	.895	NE.....	E.....	NW.....	2	2	4	1.3	N. 9 E.	10	10	4		.08
.883	.655	.738	.759	NW.....	N. NW.	NE.....	4	4	2	2.7	N. 21 W.	9	10	10		.06
.864	.800	.721	.795	NE.....	SW.....	NW.....	2	2	2	0.7	N. 45 W.	10	10	10		
.855	.619	.802	.758	SE.....	SW.....	W. SW.	2	4	25	9.3	S. 61 W.	1	2	10		
.832	.750	.800	.794							3.9	S. 81 W.	8.5	8.7	7.6		3.04



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
					7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.					°	°	°	°	°	°	°	°	°					
Jan.	1	29.453	29.455	29.577	29.495	33	30	22	35	34	26	31.7	32	24	162	121	072	115
	2	29.677	29.491	29.465	29.544	20	30	22	22	32	23	25.7	37	13	085	144	107	114
	3	29.357	29.298	29.299	29.318	24	31	26	26	33	29	29.3	34	19	106	151	106	121
	4	29.254	29.371	29.562	29.396	22	12	4	23	13	5	13.7	37	4	107	053	041	074
	5	29.634	29.568	29.644	29.515	7	13	12	8	14	12	11.3	20	0	048	067	073	062
	6	29.776	29.738	29.752	29.755	14	13	8	15	14	9	12.7	27	8	071	067	051	062
	7	30.185	30.331	30.391	30.302	....	3	4	3	5	5	04.3	24	7	....	....	....	....
	8	30.526	30.462	30.430	30.473	....	5	2	3	6	3	02.0	7	7	....	043	036	039
	9	30.327	30.181	30.082	30.197	....	15	12	0	17	13	10.0	19	1	....	063	063	063
	10	29.869	29.609	29.484	29.654	13	24	25	14	25	27	22.0	28	11	067	117	112	089
	11	29.479	29.469	29.451	29.466	28	32	31	29	32	32	31.0	37	26	142	181	162	162
	12	29.291	29.098	29.995	29.461	31	36	41	32	37	42	37.0	42	30	162	199	244	182
	13	28.983	29.076	29.263	29.107	34	32	30	35	34	31	33.3	43	21	157	155	155	136
	14	29.675	29.800	29.860	29.778	4	2	2	4	2	2	02.7	34	1	052	047	047	045
	15	29.860	29.644	29.174	29.559	2	11	21	2	12	23	12.3	25	1	047	061	090	084
	16	28.953	29.109	29.239	29.100	30	24	23	31	25	25	27.0	33	20	155	117	100	124
	17	29.337	29.116	29.088	29.180	25	33	30	26	34	33	31.0	35	22	123	175	132	140
	18	29.171	29.135	29.183	29.163	31	36	30	32	38	31	33.7	40	29	162	186	155	162
	19	29.157	29.175	29.181	29.171	38	40	52	41	42	55	46.0	56	28	190	221	349	232
	20	29.106	29.408	29.499	29.338	33	13	9	34	14	10	19.3	60	11	175	067	054	086
	21	29.567	29.481	29.398	29.482	6	12	13	7	13	14	11.3	18	15	046	063	067	069
	22	29.441	29.525	29.466	29.477	12	17	14	13	19	15	12.3	27	9	063	071	071	062
	23	29.654	29.587	29.601	29.614	11	20	16	12	22	17	17.0	30	8	061	085	078	075
	24	29.601	29.555	29.435	29.530	10	22	22	10	23	23	18.7	32	8	068	107	107	094
	25	29.069	29.084	29.166	29.106	24	26	22	25	27	23	25.0	34	22	117	129	107	115
	26	29.260	29.314	29.353	29.309	20	21	15	21	23	16	20.0	26	15	096	090	074	087
	27	29.495	29.492	29.503	29.497	18	22	19	19	24	20	21.0	26	12	087	095	092	091
	28	29.395	29.339	29.325	29.353	18	23	22	19	25	23	22.3	27	12	087	100	107	092
	29	29.382	29.278	29.321	29.327	23	30	27	24	32	28	28.0	34	22	112	144	136	131
	30	29.098	29.685	29.191	29.325	31	33	29	33	34	32	33.0	37	27	151	175	136	151
	31	29.160	29.036	28.924	29.040	20	27	26	21	30	27	26.0	37	20	096	113	129	113
Means....		29.490	29.481	29.493	29.488	....	....	....	19.9	23.4	21.4	21.6	....	....	107	114	102	109
Feb.	1	29.917	28.942	29.000	28.953	19	19	16	22	20	17	19.7	37	17	069	092	078	080
	2	29.175	29.020	29.027	29.041	18	19	17	19	21	18	19.3	28	11	027	060	083	083
	3	29.166	29.135	29.226	29.176	10	14	10	11	15	11	12.3	26	10	057	071	057	062
	4	29.284	29.421	29.554	29.420	8	11	7	8	13	8	09.7	22	6	062	049	042	050
	5	29.833	29.806	29.658	29.766	1	10	13	1	11	14	08.7	23	0	045	057	067	056
	6	29.856	29.894	29.889	29.880	14	15	9	15	16	10	13.7	20	10	071	074	054	066
	7	29.686	29.596	29.531	29.604	10	27	25	11	30	28	23.0	33	6	057	113	100	090
	8	29.474	29.308	29.329	29.370	25	31	24	27	33	25	28.3	5	24	112	151	117	127
	9	29.380	29.259	29.136	29.258	20	26	28	21	29	30	26.7	33	17	090	106	130	111
	10	29.165	29.142	29.175	29.161	34	38	36	38	43	38	29.7	44	28	144	164	186	165
	11	29.166	29.218	29.421	29.268	33	32	31	34	33	32	33.0	40	31	175	162	162	166
	12	29.529	29.447	29.444	29.473	24	25	26	25	26	27	26.0	34	24	117	123	128	121
	13	29.507	29.451	29.456	29.471	25	30	29	26	32	30	29.3	35	26	123	144	149	121
	14	28.986	28.926	28.961	28.958	32	33	26	34	34	28	32.0	38	27	155	175	117	149
	15	29.289	29.323	29.550	29.387	2	19	1	2	20	2	08.0	22	1	047	092	034	052
	16	29.911	29.782	29.742	29.812	....	4	4	5	5	5	01.7	13	6	....	041	041	041
	17	29.778	29.643	29.566	29.662	13	33	29	14	35	30	26.3	36	5	067	162	149	136
	18	29.546	29.398	29.093	29.346	29	31	34	30	33	35	32.7	39	15	149	151	183	161
	19	29.001	28.886	29.016	28.968	31	....	29	32	....	30	32.0	36	30	162	....	149	155
	20	29.222	29.304	29.465	29.330	23	25	18	24	27	19	23.3	36	18	112	112	067	104
	21	29.751	29.645	29.582	29.659	16	34	35	17	38	39	31.3	40	12	078	144	152	125
	22	29.577	29.528	29.527	29.544	38	42	37	41	48	41	43.3	50	38	190	189	162	122
	23	29.507	29.326	29.164	29.332	37	48	45	41	53	50	48.0	55	38	168	209	234	224
	24	28.964	29.058	29.216	29.078	41	32	29	42	33	30	35.0	63	30	244	162	149	187
	25	29.591	29.678	29.681	29.650	11	12	9	13	14	10	12.3	36	9	049	052	054	062
	26	30.053	29.974	29.757	29.928	5	15	15	5	16	16	12.3	24	3	055	074	074	062
	27	29.677	29.705	29.721	29.701	24	32	27	26	34	28	29.3	36	11	106	155	136	122
	28	29.749	29.605	29.523	29.626	25	36	33	25	38	35	32.7	40	42	135	186	162	161
Means....		29.451	29.408	29.407	29.422	....	....	....	21.4	27.9	24.5	24.6	....	....	108	124	116	116

the northern and northwestern lakes, at Buffalo, New York.

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.			9 p. m.
.797	.617	.515	.643	W. SW.	W. SW.	NW.	4	25	12	12.0	S. 86 W.	10	10	10		
.721	.794	.864	.793	E by N.	W.	NE.	2	2	2	0.7	N. 38 W.	10	3	0		
.754	.800	.665	.740	SE.	W. SW.	NW.	4	12	4	4.0	S. 66 W.	4	10	10		
.864	.810	.750	.808	W. SW.	NW.	NW.	4	35	25	20.3	N. 49 W.	10	10	4		
.777	.816	1.000	.864	N by W.	W.	NW.	12	12	12	1.0	N. 48 W.	7	9	3		
.823	.816	.784	.808	NW.	E.	NE.	4	4	4	2.3	N. 42 E.	10	10	6		
				N. NE.	NE.	N.	4	4	2	3.3	N. 27 E.	2	4	0		
	.760	.730	.745	NE.	NW.	NW.	2	4	2	2.0	N. 28 W.	10	10	1		
	.671	.810	.740	SE.	NW.	SW.	2	2	2	0.7	S. 45 W.	10	2	0		
.816	.872	.761	.816	SW.	S. SW.	SW.	2	2	12	5.3	S. 43 W.	10	10	10		
.887	.000	.896	.628	N. NW.	W. SW.	S. by E.	2	2	2	0.8	S. 65 W.	10	10	10		
.896	.903	.914	.904	E. NE.	E.	SW.	2	2	12	2.7	S. 35 W.	10	10	10		.08
.712	.792	.893	.799	SW.	W. SW.	NW.	25	25	4	16.3	S. 61 W.	10	10	10		.06
1.000	1.000	1.000	1.000	N.	N.	N.	4	12	2	6.0	North.	10	10	10		.06
1.000	.804	.730	.845	E. NE.	E. NE.	SE.	2	12	4	5.3	N. 81 E.	10	9	10		.02
.893	.872	.746	.837	SW.	W. SW.	W.	4	45	45	30.7	S. 77 W.	4	10	10		.26
.876	.895	.703	.825	SW.	SW.	SW.	12	12	25	16.3	S. 45 W.	10	10	10		.02
.896	.811	.893	.867	SW.	SW. W.	NW.	4	4	2	2.8	S. 64 W.	10	10	10		.08
.738	.829	.805	.791	S.	W. SW.	S.	2	2	4	2.6	S. 15 W.	10	1	0		
.895	.816	.791	.834	W. SW.	W. SW.	W. SW.	35	60	45	13.3	S. 68 W.	10	10	4		.14
.789	.810	.816	.798	NW.	W. SW.	W. SW.	35	45	45	3.6	S. 85 W.	10	10	10		.04
.810	.692	.823	.775	NW.	W. SW.	NW.	12	12	2	7.3	N. 75 W.	10	6	1		.02
.804	.721	.834	.786	S. SE.	S. SW.	NE.	2	2	2	1.0	S. 27 E.	10	10	6		
1.000	.864	.864	.909	E. SE.	E. NE.	SE.	2	4	12	5.3	S. 63 E.	10	10	10		
.872	.880	.864	.872	NE.	NW.	NW.	4	4	2	2.7	N. 80 W.	10	10	10		.46
.855	.730	.829	.805	NW.	NW.	SE.	2	4	2	1.3	N. 45 W.	10	10	10		.10
.845	.738	.850	.811	E. SE.	NW.	E.	2	2	2	0.8	N. 89 E.	10	10	10		.02
.845	.746	.864	.818	NE.	E.	E.	2	2	2	1.9	N. 75 E.	10	10	10		
.868	.794	.883	.848	NE.	N. NE.	NE.	2	2	2	1.9	N. 38 E.	10	10	9		
.800	.895	.694	.796	SE.	W. SW.	NW.	4	4	12	3.4	N. 66 W.	10	10	10		
.855	.675	.880	.803	W. SW.	W. SW.	NW.	4	25	12	1.2	S. 86 W.	0	3	3		.02
.845	.807	.845	.820							6.2	S. 84 W.	8.9	8.6	7.0		1.36
.584	.850	.834	.756	NW.	NW.	NW.	4	25	4	11.0	N. 45 W.	10	10	9		
.845	.712	.810	.799	W.	W. SW.	NW.	4	12	4	6.0	S. 85 W.	10	10	10		
.797	.823	.797	.806	W. SW.	W.	NW.	12	25	25	18.3	N. 76 W.	10	10	0		
1.000	.623	.777	.800	W. SW.	NW.	N. NW.	25	12	4	14.7	N. 86 W.	10	10	0		.04
1.000	.767	.816	.871	W. SW.	SW.	W. SW.	2	12	12	8.3	S. 57 W.	0	10	1		
.823	.829	.791	.814	SW.	NE.	SW.	25	2	4	9.0	S. 45 W.	10	10	0		
.797	.675	.655	.709	E. NE.	W. SW.	SW.	2	2	2	0.7	S. 45 W.	6	10	10		
.761	.800	.872	.811	NE.	NE.	NE.	2	2	12	5.3	N. 45 E.	10	10	10		
.855	.665	.782	.767	NW.	SW.	SE.	2	2	2	0.7	S. 45 W.	10	10	0		.12
.628	.587	.811	.679	S.	S. SW.	NE.	4	2	2	1.5	S. 1 E.	10	10	10		
.895	.893	.896	.895	NE.	N.	NE.	2	4	4	3.7	N. 27 E.	10	10	10		.12
.872	.876	.880	.876	NE.	N. NE.	N.	4	4	2	3.2	N. 27 E.	10	10	10		.34
.876	.794	.890	.853	NW.	S. SW.	SW.	2	2	2	1.4	S. 63 W.	10	10	10		
.792	.895	.768	.838	E. NE.	W. SW.	W. SW.	4	12	45	18.0	S. 67 W.	10	10	10		.06
1.000	.850	.718	.856	W. SW.	W. SW.	W. SW.	60	45	25	10.0	S. 68 W.	10	10	0		.18
	.750	.750	.750	W. SW.	SW.	W. SW.	35	25	25	28.0	S. 61 W.	10	1	1		.20
.816	.797	.890	.834	SW.	SW.	SW.	25	12	12	16.3	S. 45 W.	2	2	1		
.890	.800	.898	.863	SE.	SW.	SW.	2	2	2	1.5	S. 19 W.	10	10	10		
.896		.890	.893	SW.	SW.	W. SW.	2	12	25	13.0	S. 60 W.	10	10	10		.14
.868	.761	.845	.825	SW.	NW.	SW.	25	35	2	14.7	N. 83 W.	10	10	9		.04
.834	.628	.636	.699	SW.	SW.	W. SW.	2	12	12	8.7	S. 56 W.	10	7	2		.02
.738	.563	.653	.653	SW.	SW.	SW.	12	12	4	9.3	S. 45 W.	9	8	10		
.653	.667	.646	.655	SE.	SW.	SE.	2	4	12	4.7	S. 30 E.	6	10	10		
.914	.893	.890	.899	W. SW.	W. SW.	NW.	4	12	35	14.7	N. 65 W.	10	10	10		.16
.623	.635	.791	.883	N.	N.	NW.	12	4	4	6.3	N. 8 W.	10	10	10		.02
1.000	.829	.829	.886	W. SW.	SW.	NE.	4	12	4	4.0	S. 53 W.	10	6	10		
.754	.792	.883	.776	NE.	NW.	NE.	2	2	2	1.7	N. 16 E.	10	0	0		.04
1.000	.811	.797	.869	NE.	NE.	NE.	4	4	2	3.3	N. 45 E.	10	8	10		
.834	.763	.804	.800							0.7	S. 76 W.	9.0	8.3	6.5		1.44

Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.					°	°	°	°	°	°	°	°	°					
March	1	29.499	29.425	29.321	29.415	41	48	43	44	57	47	49.3	59	32	231.	217.	235.	228.
	2	29.464	29.347	29.285	29.365	40	54	49	42	60	53	51.7	61	42	130.	328.	285.	224.
	3	29.445	29.398	29.348	29.397	33	34	31	34	37	33	34.7	57	32	175.	157.	151.	161.
	4	29.339	29.412	29.467	29.406	24	21	21	25	24	22	23.7	35	20	117.	079.	101.	112.
	5	29.568	29.539	29.552	29.553	17	27	23	18	29	24	23.7	34	18	083.	124.	112.	106.
	6	29.658	29.535	29.504	29.566	17	28	25	18	34	27	26.3	36	17	083.	085.	112.	090.
	7	29.443	29.398	29.564	29.468	19	25	18	20	33	19	24.0	34	17	092.	043.	087.	074.
	8	29.525	29.376	29.492	29.464	18	29	21	19	30	24	24.3	32	17	087.	149.	079.	125.
	9	29.415	29.359	29.485	29.420	18	23	17	19	25	19	21.0	31	16	087.	100.	071.	082.
	10	29.707	29.617	29.533	29.616	6	21	19	7	22	20	16.3	33	5	046.	101.	092.	080.
	11	29.026	29.113	29.205	29.115	33	37	37	34	39	38	33.7	42	16	175.	194.	207.	192.
	12	29.303	29.127	29.525	29.318	34	33	32	35	34	33	34.0	41	33	183.	173.	168.	173.
	13	29.641	29.648	29.648	29.646	32	32	32	32	33	33	32.7	36	31	181.	168.	168.	173.
	14	29.468	29.415	29.394	29.426	32	55	40	33	57	42	44.0	58	30	168.	407.	291.	295.
	15	29.419	29.260	29.178	29.286	44	36	36	44	36	37	39.0	43	32	228.	212.	159.	223.
	16	29.131	29.043	29.044	29.073	32	32	23	32	35	27	31.3	37	26	181.	142.	078.	134.
	17	29.200	29.386	29.436	29.341	12	14	9	13	15	11	13.0	36	10	063.	071.	043.	658.
	18	29.404	29.165	29.234	29.268	11	18	21	12	19	23	18.0	27	8	061.	087.	080.	079.
	19	29.398	29.386	29.409	29.398	17	28	23	18	30	25	24.3	35	18	083.	130.	100.	104.
	20	29.437	29.207	28.949	29.198	21	25	28	22	26	29	26.0	36	21	101.	123.	130.	115.
	21	29.835	29.104	29.367	29.435	33	25	21	34	27	22	27.7	37	22	175.	112.	101.	122.
	22	29.592	29.609	29.541	29.581	22	30	26	24	32	29	28.3	35	21	093.	144.	106.	115.
	23	29.218	29.110	29.156	29.161	33	36	33	37	40	34	37.0	44	28	136.	160.	175.	157.
	24	29.285	29.216	29.049	29.183	46	29	28	48	30	29	35.7	36	27	224.	149.	142.	192.
	25	29.228	29.228	29.296	29.251	9	12	10	10	14	11	11.7	37	7	054.	052.	057.	054.
	26	29.481	29.557	29.617	29.552	12	25	19	13	26	22	20.3	31	10	063.	123.	052.	071.
	27	29.886	29.738	29.739	29.788	15	32	24	15	33	25	24.3	35	13	086.	168.	117.	124.
	28	29.607	29.385	29.160	29.384	24	33	35	26	34	36	32.0	39	21	106.	175.	191.	157.
	29	29.183	29.211	29.296	29.230	30	31	27	31	32	30	31.0	38	29	155.	162.	113.	143.
	30	29.375	29.246	29.199	29.273	22	29	27	23	30	28	27.0	36	19	107.	149.	136.	131.
	31	29.033	28.864	28.852	28.916	32	40	34	35	42	35	37.3	43	27	142.	221.	183.	192.
Means....		29.426	29.336	29.350	29.371	.....	.....	.....	26.3	32.7	28.6	29.2	....	....	130.	152.	133.	132.
April	1	29.295	29.483	29.528	29.435	32	33	32	34	35	33	34.0	40	33	155.	162.	168.	162.
	2	29.551	29.538	29.503	29.531	31	35	33	32	37	35	34.7	43	31	162.	178.	162.	167.
	3	29.492	29.437	29.368	29.432	36	54	46	39	60	48	49.0	62	33	173.	328.	284.	280.
	4	29.407	29.338	29.287	29.344	39	63	56	41	75	60	58.7	77	38	212.	415.	336.	341.
	5	29.262	29.280	29.387	29.310	54	50	40	62	55	41	52.7	67	41	312.	295.	235.	281.
	6	29.445	29.534	29.555	29.511	33	34	33	34	36	34	34.7	42	33	175.	170.	175.	173.
	7	29.613	29.545	29.511	29.556	29	30	29	31	34	32	32.3	35	31	137.	121.	136.	128.
	8	29.516	29.432	29.556	29.501	29	32	29	30	39	30	33.0	41	28	149.	090.	149.	133.
	9	29.656	29.611	29.608	29.625	29	38	32	30	47	37	38.0	48	25	149.	112.	116.	128.
	10	29.593	29.433	29.376	29.467	31	43	38	35	54	45	44.7	57	32	128.	133.	138.	133.
	11	29.416	29.391	29.396	29.401	41	45	41	45	51	45	47.0	54	39	205.	220.	205.	210.
	12	29.428	29.214	29.094	29.245	45	52	45	52	65	54	57.0	66	43	207.	216.	181.	201.
	13	29.475	29.576	29.594	29.548	37	45	39	38	49	42	43.0	57	34	207.	247.	199.	216.
	14	29.417	29.189	29.275	29.294	37	47	37	41	52	38	43.7	62	36	168.	257.	207.	211.
	15	29.482	29.526	29.504	29.504	37	44	39	39	49	42	43.3	51	36	194.	223.	199.	208.
	16	29.537	29.505	29.421	29.488	37	51	47	41	57	51	49.7	59	36	168.	295.	270.	244.
	17	29.623	29.641	29.633	29.632	48	58	50	50	66	54	56.7	70	39	309.	376.	308.	331.
	18	29.621	29.518	29.464	29.534	49	62	57	51	71	61	61.0	72	42	321.	436.	412.	390.
	19	29.513	29.461	29.416	29.463	52	61	61	54	66	64	61.3	67	50	362.	470.	497.	443.
	20	29.321	29.191	29.141	29.218	48	62	60	66	70	63	66.3	72	58	098.	449.	478.	342.
	21	29.082	28.975	28.960	29.006	50	57	41	51	65	44	53.3	66	43	348.	359.	218.	308.
	22	28.915	29.057	29.077	29.016	43	43	38	46	45	41	44.0	51	40	238.	251.	190.	226.
	23	28.845	28.543	28.585	28.658	39	42	33	42	43	34	39.7	44	33	199.	254.	173.	209.
	24	28.688	28.752	28.865	28.768	32	37	33	33	39	38	36.7	46	31	168.	194.	123.	162.
	25	28.865	28.903	29.038	28.935	30	35	32	34	39	37	36.7	44	31	121.	132.	116.	130.
	26	29.185	29.222	29.285	29.231	32	37	32	34	43	34	37.0	44	32	155.	142.	153.	151.
	27	29.413	29.359	29.309	29.360	34	39	39	35	44	44	41.0	50	32	183.	173.	173.	176.
	28	29.089	28.973	28.996	29.019	49	53	50	56	62	57	58.3	64	41	253.	284.	268.	279.
	29	29.360	29.294	29.306	29.320	37	42	37	40	46	45	43.7	57	37	181.	215.	116.	171.
	30	29.377	29.214	29.292	29.294	37	40	35	41	46	39	42.0	47	31	168.	169.	152.	160.
Means....		29.349	29.304	29.311	29.321	.....	.....	.....	41.9	51.3	44.1	45.8	.....	.....	200.	246.	230.	222.

the northern and northwestern lakes, at Buffalo, New York

VAPOR.				WIND.								Amount of cloudiness. (0=clear sky.) (10=sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
.833	.465	.693	.665	S	SW.	NE.	2	2	2	0.7	South	10	8	10		
.373	.653	.733	.586	SW.	S. SW.	SE.	2	2	4	2.0	S. 6 E.	10	9	10		
.895	.712	.800	.802	SW.	W. SW.	W. SW.	12	25	25	20.3	S. 63 W.	3	10	0		.02
.872	.610	.860	.781	NW.	W. by N.	NW.	4	12	12	9.0	N. 59 W.	10	10	10		
.840	.775	.868	.828	W. NW.	W	NW.	12	25	4	1.7	N. 82 W.	10	9	0		.02
.840	.432	.761	.678	W. NW.	W	W. SW.	4	12	4	6.5	West.	10	8	10		
.850	.230	.845	.643	W	W	NW.	4	25	4	10.7	N. 85 W.	10	8	6		
.845	.890	.610	.782	NW.	NW.	NW.	12	25	4	13.7	N. 45 W.	10	9	1		.02
.845	.746	.692	.761	SW.	N. NW.	NW.	2	4	4	2.7	N. 48 W.	10	10	0		
.769	.860	.850	.826	W. SW.	SW.	SW.	2	25	2	9.3	S. 47 W.	3	0	0		.02
.895	.816	.905	.872	SW.	SE.	W. SW.	12	12	2	6.0	S. 5 W.	10	10	10		.18
.893	.895	.893	.895	NE	W. NW.	W. SW.	2	4	2	1.7	N. 65 W.	10	10	10		.10
1.000	.893	.893	.929	N	NE	NE	4	12	4	6.3	N. 37 E.	10	10	10		.12
.893	.874	.829	.865	NW.	S. SW.	NE	4	4	2	1.0	N. 78 W.	10	10	10		.04
1.000	.100	.903	.968	N. NW.	NE	NW.	2	4	2	2.0	N. 6 W.	10	10	10		.02
1.000	.698	.529	.742	SW.	W. SW.	NW.	12	25	12	14.0	S. 77 W.	10	10	10		.44
.910	.823	.596	.743	W. SW.	W	NW.	4	25	12	12.7	N. 78 W.	10	10	0		.02
.804	.845	.730	.793	W. SW.	SW.	NW.	12	4	4	5.7	S. 75 W.	10	10	6		
.840	.782	.746	.789	N	W	NE	2	2	2	1.0	N. 10 W.	10	10	2		.02
.860	.876	.782	.839	NE	NE	NE	4	25	4	11.0	N. 45 E.	10	10	10		
.895	.761	.860	.839	W. SW.	W	W. NW.	2	25	4	10.0	N. 89 W.	10	10	0		.46
.738	.794	.665	.732	N. NW.	SW.	E. NE.	4	12	2	3.3	S. 55 W.	10	2	10		
.619	.645	.895	.720	S. SE.	SW.	W	2	4	4	2.7	S. 55 W.	10	10	10		
.850	.890	.887	.876	N. NW.	SW.	W. SW.	4	12	4	5.3	N. 86 W.	10	10	10		
.791	.635	.797	.741	NW.	W. NW.	NW.	12	25	12	16.0	N. 57 W.	9	6	10		.12
.810	.876	.467	.718	W. NW.	W	W. NW.	4	12	4	6.7	N. 81 W.	0	7	0		.02
1.000	.893	.872	.922	SW.	SW.	W. SW.	4	4	2	3.3	S. 52 W.	0	1	0		
.754	.895	.900	.850	NE	SW.	SE.	2	2	12	1.0	S. 45 E.	10	10	10		
.893	.896	.675	.821	W. SW.	SW.	NW.	25	35	12	20.7	S. 66 W.	10	10	10		.04
.864	.890	.883	.879	NW.	SW.	SW.	2	25	4	9.7	S. 49 W.	0	2	10		
.698	.829	.898	.808	S	S	W. by N.	12	4	4	5.3	S. 13 W.	10	9	10		
.835	.770	.697	.796							5.0	S. 89 W.	8.5	8.3	6.6		1.66
.792	.797	.893	.827	W. NW.	SW.	W	4	4	2	3.0	S. 82 W.	10	10	10		.04
.896	.807	.797	.833	E. SE.	SE.	NE	2	2	4	2.0	N. 84 E.	10	10	0		
.726	.653	.850	.743	NE	NE	E	4	4	2	3.0	N. 53 E.	0	10	0		
.824	.479	.765	.689	N. NW.	SW.	NE	4	2	2	1.3	N. 22 W.	6	8	0		
.561	.681	.912	.718	S	SW.	SW.	12	25	4	12.7	S. 32 W.	10	9	3		
.895	.802	.895	.864	SW.	SW.	W. SW.	4	12	12	9.0	S. 56 W.	10	10	10		
.788	.617	.694	.700	NW.	W. NW.	W. SW.	4	4	2	3.0	N. 67 W.	10	10	10		
.890	.379	.890	.720	NW.	NW.	W. SW.	4	4	4	3.3	N. 64 W.	10	6	0		
.890	.344	.527	.587	SW.	NW.	NE.	2	12	4	4.0	N. 36 W.	2	1	0		
.628	.320	.459	.469	SE.	W. SW.	S	4	4	2	3.7	S. 55 W.	10	10	10		
.684	.590	.684	.653	S. SE.	SW.	S. SE.	4	12	2	5.3	S. 23 W.	10	0	0		
.535	.351	.434	.440	SE.	SW.	SW.	4	4	12	5.7	S. 30 W.	10	2	10		
.905	.710	.744	.786	W. SW.	W. SW.	NE.	4	12	2	4.7	S. 70 W.	3	4	0		.18
.653	.660	.905	.739	NE.	SW.	SE.	2	4	2	0.9	South	10	10	0		
.816	.638	.744	.733	NW.	NW.	NE.	4	4	4	3.0	N. 18 W.	7	6	0		.08
.653	.634	.722	.670	NE.	E. NE.	E. SE.	12	25	12	15.0	N. 72 E.	0	10	1		
.856	.588	.738	.727	SE.	SW.	SE.	4	4	2	2.7	S. 10 E.	10	4	1		
.859	.576	.769	.735	SW.	SW.	SW.	2	4	4	3.3	S. 45 W.	8	5	9		
.867	.735	.833	.812	SW.	SW.	NE.	4	4	4	1.3	S. 45 W.	10	9	10		
.152	.613	.831	.532	SW.	W	NW.	4	4	2	3.0	S. 81 W.	10	10	10		
.929	.582	.756	.756	SW.	W. SW.	SW.	4	12	2	6.0	S. 61 W.	10	9	10		.42
.767	.840	.738	.782	S. SW.	SW.	SW.	2	12	2	5.3	S. 43 W.	0	2	8		
.744	.916	.895	.852	E. SE.	N. NE.	N. NW.	12	35	45	23.3	N. 6 E.	10	10	10		
.893	.816	.537	.749	NW.	SW.	NW.	25	4	4	9.7	N. 53 W.	10	10	0		1.54
.617	.636	.527	.627	W. SW.	SW.	NW., W	4	12	12	7.7	S. 82 W.	0	10	10		
.792	.511	.792	.702	NW.	W. NW.	NW.	4	12	2	6.0	N. 61 W.	10	10	0		
.898	.597	.597	.697	S. SW.	SW.	S. SW.	2	4	2	2.7	S. 33 W.	2	10	1		
.569	.511	.577	.552	S	SW.	W	2	12	45	16.0	S. 85 W.	0	8	9		
.732	.691	.386	.570	SW.	W. SW.	NW.	4	25	4	70.0	S. 71 W.	0	7	0		
.663	.543	.636	.611	SW.	SW.	W. SW.	4	4	2	3.3	S. 50 W.	1	3	9		
.749	.620	.717	.696							2.6	S. 87 W.	6.6	7.4	4.7		2.26



Reductions of the monthly meteorological register of the survey of

Date.		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
						Wet bulb, or point of evaporation.				Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.			
																7 a. m.	2 p. m.	9 p. m.	Mean.
1866.						°	°	°	°	°	°	°	°	°					
May	1	29.255	28.932	28.928	29.038	34	40	30	38	43	33	38.0	48	34	144	208	138	160	
	2	29.132	29.187	29.238	29.186	35	40	33	39	45	37	40.3	46	32	152	182	136	171	
	3	29.280	29.246	29.238	29.255	33	39	35	36	43	37	38.7	44	34	149	186	138	171	
	4	29.200	29.152	29.153	29.168	38	38	37	40	43	39	40.7	46	36	203	164	134	174	
	5	29.190	29.246	29.278	29.238	39	42	36	40	45	37	40.7	48	34	225	228	138	174	
	6	29.394	29.388	29.425	29.402	39	43	36	42	48	38	42.7	48	30	199	212	136	174	
	7	29.557	29.537	29.486	29.527	40	50	42	41	60	45	48.7	60	32	235	226	137	174	
	8	29.443	29.244	29.131	29.273	45	53	50	50	65	55	56.7	66	38	234	244	135	174	
	9	29.162	29.154	29.217	29.178	43	46	40	43	50	41	44.7	58	40	278	252	133	174	
	10	29.318	29.265	29.241	29.275	46	54	49	48	57	51	52.0	58	41	224	372	133	174	
	11	29.268	29.188	29.189	29.215	47	61	56	52	75	63	63.3	77	44	257	350	136	174	
	12	29.290	29.271	29.163	29.241	51	58	51	55	66	58	59.7	67	51	321	376	132	174	
	13	29.105	29.200	29.284	29.196	46	43	37	46	44	42	44.0	60	41	311	264	153	174	
	14	29.395	29.427	29.384	29.402	36	41	41	38	45	42	41.7	47	34	186	205	144	174	
	15	29.359	29.168	29.074	29.200	40	52	47	44	60	54	52.7	63	39	195	222	131	174	
	16	29.118	29.166	29.307	29.197	47	49	40	48	53	41	47.3	57	41	310	295	135	174	
	17	29.370	29.312	29.179	29.287	36	49	46	36	58	48	47.3	60	33	212	229	134	174	
	18	29.194	29.133	29.139	29.155	47	60	51	50	66	56	57.3	67	42	283	438	137	174	
	19	29.196	29.200	29.161	29.186	50	62	57	53	74	63	63.3	76	46	321	396	136	174	
	20	29.111	29.000	29.054	29.055	57	64	52	63	75	54	64.0	79	51	326	449	132	174	
	21	29.149	28.212	29.239	29.200	46	42	40	52	47	44	47.7	56	42	232	201	135	174	
	22	29.317	29.331	29.359	29.336	38	42	41	41	47	44	44.0	49	38	190	202	135	174	
	23	29.387	29.391	29.396	29.391	38	43	41	41	47	45	44.3	52	37	190	225	135	174	
	24	29.476	29.418	29.243	29.379	42	46	44	45	52	50	49.0	53	36	222	232	132	174	
	25	29.226	29.151	29.079	29.153	48	48	46	49	50	48	49.0	56	48	322	300	134	174	
	26	29.074	28.980	28.966	29.007	44	62	46	46	71	53	56.7	73	39	262	436	119	174	
	27	28.766	28.642	28.600	28.669	51	61	51	53	63	52	56.0	66	51	348	510	131	174	
	28	28.723	28.969	28.979	28.890	46	46	45	47	52	48	49.0	53	45	297	232	130	174	
	29	28.952	28.924	29.039	28.972	46	48	46	47	50	48	48.3	51	45	297	305	124	174	
	30	29.102	29.052	29.049	29.068	46	49	50	47	51	52	50.0	53	44	297	321	134	174	
	31	29.318	29.405	29.448	29.390	46	51	45	48	53	48	49.7	54	44	284	348	130	174	
Means....		29.220	29.190	29.183	29.198	.....	.....	.....	45.7	51.8	47.4	49.3	.....	.....	253	287	253	254	
June	1	29.511	29.434	29.393	29.446	45	54	49	47	65	54	55.3	67	39	273	272	288	272	
	2	29.395	29.273	29.247	29.305	54	62	55	57	73	60	63.3	76	42	378	409	327	322	
	3	29.189	29.122	29.071	29.127	59	62	59	63	70	63	65.3	72	58	447	449	447	444	
	4	29.044	29.080	29.128	29.084	63	64	63	65	67	64	65.3	75	58	549	556	562	552	
	5	29.145	29.110	29.103	29.119	63	70	65	65	75	66	68.7	75	59	549	666	634	622	
	6	29.113	29.091	29.081	29.095	59	61	54	62	63	55	60.0	67	54	460	510	404	472	
	7	29.004	29.178	29.105	29.096	53	57	52	54	60	53	55.7	60	52	320	426	375	351	
	8	29.236	29.253	29.264	29.251	54	63	57	55	69	61	61.7	74	51	404	495	412	435	
	9	29.272	29.247	29.312	29.277	57	75	60	58	83	62	67.7	84	56	452	760	491	528	
	10	29.482	29.499	29.520	29.500	57	58	53	52	63	55	58.7	64	55	452	416	376	415	
	11	29.525	29.473	29.510	29.503	55	62	51	57	69	55	60.3	72	46	407	462	321	377	
	12	29.522	29.358	29.262	29.381	52	67	57	58	75	62	65.0	76	50	309	554	320	422	
	13	29.141	29.107	29.126	29.125	68	65	59	70	72	61	67.7	72	57	658	524	473	552	
	14	29.131	29.138	29.118	29.129	62	61	56	66	68	60	64.7	71	59	502	443	386	445	
	15	29.093	29.155	29.138	29.129	58	59	56	62	65	60	62.3	66	56	429	420	386	415	
	16	29.154	29.163	29.184	29.167	57	51	56	61	66	61	62.7	67	57	412	176	383	324	
	17	29.204	29.153	28.893	29.083	57	59	57	61	62	58	60.3	68	57	412	460	432	441	
	18	28.716	28.808	29.709	29.078	51	56	49	60	60	51	57.0	61	51	255	396	321	324	
	19	29.002	29.200	29.307	29.170	50	53	53	51	55	56	54.0	59	50	348	376	363	362	
	20	29.425	29.464	29.422	29.437	52	60	51	57	65	62	61.3	65	50	322	451	255	323	
	21	29.393	29.377	29.215	29.328	65	69	65	69	79	72	73.3	79	60	564	574	524	534	
	22	29.259	29.261	29.272	29.264	62	66	61	63	70	62	65.0	72	59	542	526	523	522	
	23	29.304	29.265	29.294	29.288	62	70	63	65	76	65	68.7	76	59	516	652	549	572	
	24	29.300	29.314	29.365	29.326	69	74	69	74	80	72	73.3	80	65	641	752	622	622	
	25	29.408	29.483	29.396	29.429	70	71	60	65	73	64	70.7	76	64	666	731	465	622	
	26	29.228	29.162	29.087	29.159	70	73	67	75	81	76	77.3	83	63	666	703	542	622	
	27	29.135	29.148	29.193	29.159	64	62	59	65	68	62	65.0	74	62	583	476	460	522	
	28	29.354	29.376	29.395	29.375	52	55	52	54	64	57	58.3	66	52	362	314	322	322	
	29	29.482	29.462	29.430	29.458	48	55	52	51	62	55	56.0	63	45	296	340	349	322	
	30	29.484	29.501	29.524	29.503	52	61	57	54	70									

*orthern and northwestern lakes, at Buffalo, New York.*

VAPOR.				WIND.								Amount of cloudiness. (0=clear sky.) (10=sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
22	.750	.703	.694	NE....	E. NE.	N. NE.	2	4	12	5.7	N. 33 E.	10	10	10		
36	.607	.619	.621	W. NW.	W. NW.	W. NW.	12	25	12	16.3	N. 68 W.	0	10	10		.40
05	.669	.807	.727	W....	W. SW.	SW....	2	25	12	12.7	S. 61 W.	10	10	7		
20	.587	.816	.741	W. SW.	SW....	SW....	2	4	2	2.7	S. 39 W.	0	10	10		
10	.762	.903	.858	S. SW.	SW....	SW....	2	12	2	5.0	S. 43 W.	10	10	0		
44	.631	.811	.729	W. SW.	W. SW.	W. SW.	2	12	2	5.3	S. 65 W.	0	4	0		
12	.442	.762	.709	W....	W....	W....	2	2	2	2.0	West...	1	0	3		
46	.395	.708	.583	W....	NW....	NE....	2	4	2	1.7	N. 37 W.	2	10	10		
00	.716	.912	.876	W. SW.	W. SW.	SW....	2	4	2	2.3	S. 61 W.	10	7	10		.56
30	.812	.859	.840	SW....	SW....	SW....	4	4	2	3.3	S. 45 W.	6	6	0		
60	.403	.619	.561	NW....	NW....	NW....	2	4	2	2.7	N. 45 W.	10	9	10		
743	.528	.524	.638	W. SW.	W. SW.	W. SW.	12	12	4	9.3	S. 67 W.	10	10	10		
00	.918	.577	.832	NW....	NW....	NW....	12	4	12	9.3	N. 45 W.	10	10	10		.80
11	.624	.914	.806	NW....	SW....	W. SW.	2	12	12	8.0	S. 61 W.	0	9	0		.62
677	.516	.552	.592	W. SW.	W....	E. SE.	12	4	2	4.7	S. 68 W.	6	10	10		
925	.733	.912	.857	NW....	NE....	NE....	4	12	2	4.3	N. 31 E.	10	10	0		.12
(00)	.475	.850	.775	E. NE.	NE....	NE....	4	4	4	4.0	N. 53 E.	10	7	1		
726	.625	.627	.719	W. SW.	W. SW.	NE....	4	2	2	1.7	S. 81 W.	10	10	1		
78	.472	.670	.647	NE....	W. NW.	NE....	2	2	2	1.3	N. 15 E.	4	8	10		
670	.512	.867	.625	SE by S	W. SW.	W. SW.	2	12	12	2.0	S. 63 W.	0	1	10		
592	.624	.677	.633	NW....	W. NW.	NW....	4	25	25	17.7	N. 55 W.	9	10	10		.26
738	.624	.756	.706	NW....	NW....	NW....	12	12	4	9.3	N. 45 W.	10	10	9		
738	.692	.624	.707	NW....	SW....	W. SW.	4	25	4	9.7	S. 56 W.	9	10	0		
762	.592	.521	.647	SW....	W. SW.	W. SW.	4	25	12	13.7	S. 65 W.	0	7	10		
926	.856	.850	.877	SW....	E. NE.	SW....	4	4	2	1.0	S. 11 W.	10	10	10		
843	.576	.511	.654	NE....	NW....	NE....	2	12	4	6.0	N. 45 E.	10	10	10		.04
864	.226	.130	.293	NE....	NE....	NE....	4	12	12	9.3	N. 45 E.	10	10	10		.04
923	.592	.777	.766	NW....	W....	W. SW.	12	12	4	2.7	N. 73 W.	10	10	9		.88
923	.856	.850	.876	SW....	SW....	W. SW.	2	2	12	5.0	S. 61 W.	10	10	9		.14
923	.859	.861	.821	W....	W. SW.	W. SW.	12	25	12	16.3	S. 73 W.	8	10	10		.28
850	.864	.777	.830	NW....	SW....	W. SW.	4	12	4	5.7	S. 65 W.	7	9	0		.34
.807	.659	.756	.740							13.7	N. 87 W.	6.8	8.6	6.7		4.48
247	.441	.674	.654	SW....	W....	E. NE.	2	2	2	0.7	S. 73 W.	7	8	1		
212	.504	.708	.675	SE....	SW....	NE....	2	4	4	0.7	S. 45 E.	10	6	2		
776	.613	.776	.722	NE....	NE....	NE....	2	12	25	13.0	N. 45 E.	9	10	10		
290	.841	.943	.891	S....	W. SW.	SW....	4	12	4	6.0	S. 50 W.	9	10	10		
230	.763	.945	.868	S....	W. NW.	E. by N.	2	2	2	0.3	S. 19 E.	10	10	0		
228	.826	.934	.823	SE....	SW....	W. SW.	12	25	35	19.0	S. 46 W.	10	10	10		.30
933	.822	.932	.896	W. SW.	W. SW.	W. SW.	25	4	2	10.3	S. 68 W.	10	9	0		.18
934	.700	.769	.801	SW....	SW....	NE....	2	2	12	2.7	N. 45 E.	1	5	0		
937	.673	.824	.831	NW....	S. SW.	SW....	2	2	4	2.0	S. 58 W.	10	8	8		
937	.723	.869	.843	S. SW.	W. SW.	N. NE.	4	12	2	4.3	S. 60 W.	0	1	0		
874	.653	.743	.757	NE....	NE....	NE....	4	25	4	11.0	N. 45 E.	10	7	0		
641	.639	.718	.666	NE....	E....	E. NE.	4	4	12	6.3	N. 67 E.	4	2	3		
298	.668	.822	.816	SW....	W. SW.	W. SW.	4	25	12	13.7	S. 65 W.	10	2	0		
786	.647	.765	.733	W. SW.	SW....	W. SW.	4	12	12	9.3	S. 58 W.	10	9	0		
773	.620	.765	.739	W. SW.	W. SW.	W. SW.	25	35	12	24.0	S. 68 W.	3	3	0		
769	.276	.713	.586	SW....	W. SW.	W. SW.	12	12	12	11.7	S. 60 W.	8	2	10		
769	.220	.937	.842	SW....	NE....	NE....	2	4	25	9.0	N. 45 E.	10	10	10		
493	.765	.859	.706	S....	W. SW.	S....	25	45	35	29.3	S. 29 W.	7	10	10		
929	.869	.809	.869	W. SW.	W. SW.	NW....	12	35	2	15.7	S. 70 W.	10	10	10		
692	.731	.493	.639	SW....	W. SW.	W. SW.	4	25	2	10.3	S. 64 W.	1	0	0		
796	.520	.668	.681	SW....	SW....	SW....	4	4	4	4.0	S. 45 W.	0	0	0		
942	.799	.942	.894	SW....	SW....	SW....	2	4	2	2.7	S. 45 W.	10	3	0		
836	.727	.890	.812	SW....	SW....	SW....	2	2	2	2.0	S. 45 W.	1	10	9		
764	.741	.852	.786	SW....	SW....	SW....	2	2	2	2.0	S. 45 W.	0	1	5		
768	.902	.780	.817	SW....	SW....	W....	2	12	2	5.0	S. 50 W.	6	9	9		
768	.665	.603	.679	SW....	SW....	SW....	2	2	12	5.3	S. 45 W.	10	9	10		
944	.695	.822	.822	SW....	SW....	SE....	4	4	2	2.7	S. 29 W.	10	9	10		
267	.527	.692	.695	N. NW.	NW....	NW....	4	4	2	3.0	N. 35 W.	10	8	10		
790	.612	.805	.736	SW....	SW....	E....	2	4	2	1.7	S. 25 W.	7	3	10		
867	.570	.769	.735	NE....	NW....	NE....	2	4	2	1.9	North...	1	9	2		
.825	.624	.798	.769							4.4	S. 57 W.	6.8	6.4	5.0		.48



Reduction of the monthly meteorological register of the survey of

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
July	1	29.705	29.606	29.551	29.621	65	68	66	63	70	68	62.7	72	65	.577	.652	6.2	7.2
	2	29.668	29.636	29.608	29.637	65	61	60	67	64	62	64.3	68	60	.591	.497	4.91	5.3
	3	29.896	29.735	29.699	29.743	60	71	68	63	74	70	69.0	75	60	.472	.718	6.58	7.21
	4	29.805	29.847	29.725	29.792	70	72	69	73	75	71	73.0	76	68	.693	.744	6.82	7.29
	5	29.961	29.861	29.813	29.878	61	68	64	64	70	68	67.3	73	61	.497	.652	5.43	5.85
	6	29.846	29.698	29.573	29.706	60	76	73	62	79	76	72.3	84	60	.491	.856	7.71	29.7
	7	29.605	29.625	29.703	29.644	74	76	66	76	79	68	74.3	81	66	.812	.856	6.12	7.0
	8	29.826	29.753	29.676	29.752	62	71	64	64	74	68	62.7	76	62	.529	.712	5.77	6.2
	9	29.833	29.851	29.831	29.838	63	68	66	66	70	69	68.3	74	63	.536	.658	5.86	6.2
	10	29.886	29.898	29.673	29.819	60	65	64	61	68	66	65.0	71	58	.505	.577	5.82	5.7
	11	29.661	29.673	29.601	29.648	64	71	68	66	73	71	70.0	74	64	.561	.731	6.44	6.2
	12	29.626	29.640	29.571	29.612	63	74	59	65	75	61	67.0	76	59	.549	.826	4.73	6.2
	13	29.702	29.814	29.838	29.785	52	62	59	56	65	61	60.7	67	51	.335	.516	4.73	4.4
	14	29.886	29.861	29.788	29.845	55	64	60	57	66	63	62.0	69	53	.407	.569	4.73	4.4
	15	29.732	29.834	29.724	29.763	54	60	57	56	62	60	59.3	64	55	.391	.491	4.36	4.6
	16	29.699	29.621	29.546	29.622	55	60	58	58	64	60	59.7	62	55	.393	.505	4.58	4.5
	17	29.664	29.688	29.608	29.653	59	68	65	61	71	68	66.7	73	58	.473	.644	5.71	5.6
	18	29.621	29.615	29.546	29.594	62	75	66	63	77	69	69.7	77	57	.542	.841	5.86	5.7
	19	29.418	29.306	29.358	29.361	65	60	58	67	62	60	63.0	68	58	.591	.491	4.58	5.13
	20	29.678	29.678	29.648	29.668	62	75	70	63	76	71	70.0	76	59	.542	.854	7.29	7.25
	21	29.826	29.811	29.733	29.790	63	71	65	65	73	68	62.7	73	63	.549	.731	5.71	6.16
	22	29.816	29.876	29.738	29.810	60	66	66	62	69	69	66.7	70	60	.491	.599	5.98	5.67
	23	29.808	29.718	29.783	29.770	61	73	68	63	75	70	69.3	77	60	.510	.784	6.28	6.2
	24	29.823	29.831	29.628	29.781	63	70	68	65	72	70	69.0	72	63	.549	.706	6.52	6.2
	25	29.615	29.385	29.410	29.470	70	76	68	72	79	70	73.7	80	67	.706	.856	6.52	7.46
	26	29.528	29.563	29.630	29.574	65	72	69	67	75	72	71.3	72	66	.591	.744	6.28	6.2
	27	29.645	29.600	29.578	29.608	66	73	73	69	76	76	73.7	76	66	.599	.771	7.71	7.14
	28	29.563	29.522	29.535	29.560	71	80	66	73	81	69	74.3	81	66	.731	1.010	5.99	7.29
	29	29.725	29.740	29.655	29.707	62	68	60	65	71	63	66.3	71	60	.516	.644	4.73	5.46
	30	29.964	30.073	29.963	30.000	58	62	59	60	65	61	62.0	67	52	.456	.516	4.73	4.2
	31	30.064	30.066	29.928	30.029	54	63	60	57	66	63	62.0	68	53	.372	.536	4.73	4.2
Means....		29.745	29.725	29.675	29.715	.....	.....	.....	64.3	71.4	67.1	67.6	.....	.....	.334	.687	.532	6.2
August	1	30.016	29.941	29.931	29.963	61	68	68	64	71	71	68.7	72	58	.497	.644	6.44	5.8
	2	29.903	29.940	29.908	29.917	69	78	74	72	81	77	76.7	85	70	.662	.918	7.29	7.25
	3	29.910	29.917	29.810	29.879	73	85	76	76	87	78	80.3	87	73	.771	1.176	8.72	7.7
	4	29.900	29.828	29.793	29.860	70	70	65	71	72	68	70.3	72	65	.730	.706	5.77	6.2
	5	29.925	29.820	29.793	29.846	64	71	68	67	73	71	70.3	76	64	.556	.731	6.44	6.4
	6	29.525	29.398	29.328	29.457	66	73	71	69	76	74	73.0	76	66	.599	.771	7.71	6.2
	7	29.516	29.595	29.555	29.555	62	68	66	65	71	68	64.0	74	62	.516	.644	6.12	5.8
	8	29.751	29.763	29.775	29.763	61	74	64	63	76	66	68.3	76	60	.510	.812	5.62	6.2
	9	29.881	29.700	29.568	29.716	62	73	68	65	75	71	70.3	75	61	.516	.784	6.44	6.2
	10	29.405	29.325	29.465	29.418	67	74	65	70	77	68	71.7	77	65	.622	.799	5.71	6.2
	11	29.684	29.656	29.701	29.680	57	60	60	60	62	63	61.7	70	60	.426	.491	4.73	4.2
	12	29.789	29.758	29.736	29.758	58	62	60	60	65	62	62.3	67	58	.456	.516	4.91	4.2
	13	29.864	29.821	29.736	29.807	55	67	66	58	70	67	65.0	71	54	.393	.622	6.28	5.4
	14	29.838	29.762	29.638	29.748	61	72	70	63	75	72	70.0	76	59	.510	.744	7.06	6.2
	15	29.743	29.667	29.600	29.670	62	74	70	64	77	73	71.3	79	62	.529	.739	6.83	6.2
	16	29.733	29.765	29.758	29.752	65	68	68	67	70	70	69.0	75	65	.591	.658	6.52	6.2
	17	29.878	29.823	29.783	29.848	62	64	59	64	67	61	64.0	69	58	.529	.556	4.73	5.9
	18	29.864	29.698	29.753	29.772	54	67	63	57	70	65	64.0	72	52	.372	.622	5.46	5.16
	19	29.766	29.713	29.725	29.735	61	74	69	63	76	71	70.0	78	61	.510	.812	6.83	6.2
	20	29.705	29.720	29.533	29.653	67	72	70	68	75	72	71.7	75	65	.648	.744	7.06	6.2
	21	29.551	29.553	29.571	29.558	68	67	60	70	74	63	69.0	74	60	.658	.568	4.73	5.62
	22	29.644	29.596	29.626	29.642	58	60	60	60	62	62	61.3	69	57	.456	.491	4.91	4.73
	23	29.629	29.611	29.674	29.658	55	58	56	57	61	58	58.7	62	55	.407	.443	4.22	4.2
	24	29.916	29.968	29.716	29.867	55	64	60	57	66	62	61.7	69	55	.407	.569	4.91	4.2
	25	29.989	29.801	29.716	29.835	55	70	62	56	72	65	64.3	74	54	.420	.706	5.16	5.7
	26	29.918	29.781	29.748	29.816	62	73	68	65	76	71	70.7	77	61	.516	.771	6.44	6.4
	27	29.866	29.801	29.783	29.817</													

~~The~~ northern and northwestern lakes, at Fort Niagara, New York.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.		
.843	.898	.895	.879	SW	NE	N	2	25	35	18.0	N. 18 E.	8	7	10		.25
.893	.833	.884	.870	W	W	W	25	4	2	10.3	West	10	10	10		
.831	.856	.898	.862	SW	SW	S	2	12	35	15.0	S. 12 W.	7	8	10		
.854	.858	.899	.870	W	W	NW	4	2	35	13.0	N. 51 W.	10	8	10		
.833	.898	.793	.841	NW	W	SW	12	2	2	4.3	N. 56 W.	8	6	10		
.884	.865	.860	.870	S	S	S	12	25	12	16.3	South	10	6	10		
.906	.865	.859	.877	W	W	NW	25	45	12	26.3	N. 84 W.	10	10	10		
.888	.856	.843	.862	W	W	S	4	4	12	4.8	S. 34 W.	10	10	10		
.838	.898	.846	.861	NW	W	NW	45	4	25	24.3	N. 47 W.	10	8	10		
.941	.843	.891	.892	SW	NE	NE	2	45	4	15.7	N. 45 E.	10	10	10		
.891	.902	.850	.881	W	W	S	2	2	25	8.7	S. 9 W.	10	7	10		
.890	.952	.882	.908	W	W	NW	4	2	45	16.3	N. 50 W.	8	10	10		.12
.747	.836	.882	.822	NW	W	NW	60	45	60	51.3	N. 57 W.	10	10	10		
.874	.891	.831	.865	NW	W	NW	25	35	12	22.3	N. 67 W.	10	7	10		
.872	.884	.822	.859	SW	NE	E	2	12	2	4.1	N. 51 E.	10	10	10		
.816	.941	.880	.879	NE	NE	W	25	35	25	15.3	N. 22 E.	10	10	10		.06
.882	.850	.843	.858	NW	W	NW	35	4	45	27.7	N. 47 W.	7	8	10		
.942	.907	.846	.898	SW	S	SW	35	60	35	40.0	S. 24 W.	10	8	10		
.893	.884	.880	.852	SW	SW	NW	12	25	45	19.7	N. 85 W.	10	10	10		.34
.942	.952	.949	.944	S	S	SW	4	45	60	33.7	S. 25 W.	8	7	10		
.890	.902	.843	.878	W	NW	NE	2	4	25	8.0	N. 31 E.	9	10	10		
.884	.846	.846	.859	NE	NW	NW	60	4	2	20.0	N. 40 E.	10	8	10		
.886	.904	.898	.896	W	W	SW	25	2	2	9.3	S. 87 W.	10	6	10		
.890	.900	.898	.896	W	NE	NE	2	4	2	1.6	N. 28 E.	10	10	10		
.900	.865	.898	.888	S	SW	W	12	60	25	29.0	S. 51 W.	10	10	10		
.893	.858	.852	.868	W	W	W	60	45	4	36.3	West	10	7	10		
.846	.860	.860	.855	S	N	S	2	25	12	3.7	North	7	6	10		
.902	.955	.846	.901	SW	SW	N	4	12	25	6.0	N. 41 W.	8	9	10		.75
.836	.850	.831	.839	S	SW	W	4	4	45	16.0	S. 82 W.	8	6	10		
.880	.836	.882	.866	N	NW	SE	25	12	4	10.3	N. 10 W.	10	8	10		
.812	.838	.831	.827	SW	N	SW	2	45	2	14.3	N. 3 W.	8	9	10		
.873	.880	.865	.873							8.9	N. 76 W.	8.9	7.7	10.0		1.52
.833	.850	.850	.844	SW	NE	NE	2	35	25	9.7	N. 45 E.	10	7	10		
.852	.868	.862	.861	SW	NE	S	4	12	4	2.0	N. 73 E.	10	6	10		
.860	.917	.908	.895	S	S	S	12	35	12	19.7	South	8	7	10		
.949	.900	.843	.897	NE	NW	NW	35	25	4	15.3	N. 5 E.	10	10	10		.10
.841	.902	.850	.864	W	W	W	4	25	2	10.3	West	6	5	10		
.846	.860	.856	.854	SE	S	SW	25	45	25	26.8	South	10	10	10		.36
.836	.850	.895	.860	SW	W	W	45	35	12	28.3	S. 68 W.	10	8	10		
.886	.906	.891	.894	SW	SW	SW	2	4	35	13.4	S. 45 W.	7	10	10		
.836	.904	.850	.863	W	NW	NW	4	25	4	10.7	N. 50 W.	8	9	10		.20
.848	.862	.843	.851	S	NW	NW	35	45	60	28.0	N. 62 W.	10	7	10		.30
.822	.884	.831	.846	NW	NW	NW	45	35	45	41.7	N. 45 W.	10	10	10		
.880	.836	.884	.867	NW	W	E	25	4	4	8.3	N. 45 W.	10	8	10		
.816	.848	.946	.870	S	W	W	2	4	2	2.1	S. 71 W.	8	7	10		
.886	.858	.900	.881	SW	NW	SW	4	4	12	5.7	S. 60 W.	6	5	10		
.888	.862	.854	.868	SW	NW	SW	2	4	25	9.0	S. 53 W.	10	10	10		
.893	.898	.898	.896	NW	W	N	45	12	35	26.3	N. 33 W.	10	8	10		
.888	.841	.882	.870	NE	NE	NE	12	35	4	17.0	N. 45 E.	8	9	10		
.812	.849	.890	.850	SW	N	S	2	12	12	2.2	N. 9 E.	10	8	10		
.886	.906	.899	.897	S	S	SW	4	4	12	6.3	S. 28 W.	10	10	10		
.947	.858	.900	.902	SW	W	SW	25	35	45	32.7	S. 59 W.	8	10	10		
.893	.677	.831	.800	W	W	N	12	4	60	22.3	N. 26 W.	10	10	10		.12
.880	.884	.884	.883	N	N	N	75	45	75	65.0	North	10	10	10		
.874	.825	.876	.858	N	NW	NW	45	35	75	48.0	N. 32 W.	10	10	10		
.874	.891	.884	.883	N	W	S	25	4	12	4.7	N. 17 W.	10	8	10		
.935	.900	.836	.890	S	W	SW	4	25	4	9.3	S. 76 W.	7	8	10		
.836	.860	.850	.848	SW	S	S	12	35	45	29.7	S. 5 W.	7	10	10		
.888	.900	.833	.874	W	W	N	35	12	45	22.0	N. 46 W.	10	7	10		
.874	.836	.819	.843	SW	NE	NE	12	35	4	9.0	N. 49 E.	8	10	10		
.934	.895	.836	.888	SW	W	S	4	35	4	12.7	S. 80 W.	9	8	10		
.880	.898	.848	.875	SW	NE	NE	2	25	2	8.3	N. 45 E.	10	10	10		
.841	.958	.908	.902	SW	SW	SW	2	12	35	16.3	S. 45 W.	9	10	10		
.871	.883	.869	.874							8.3	N. 59 W.	9.0	8.6	10.0		1.18

Reductions of the monthly meteorological register of the survey

Date.		TEMPERATURE—FAHRENHEIT.												VAPOR.				
		Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				Wet bulb, or Dry bulb, or temperature of evaporation.								Elasticity, in inches and decimals.				
						point of evaporation.				perature of the open air.								
		7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.	Maximum.	Minimum.	7 a. m.	2 p. m.	9 p. m.	Mean.
1865.																		
Sept.	1	29.740	29.603	29.725	29.756	72	70	70	74	73	71	72.7	77	70	.757	.623	.713	.694
	2	29.741	29.703	29.615	29.686	62	69	66	65	72	69	68.7	75	62	.516	.627	.643	.623
	3	29.741	29.660	29.768	29.723	65	74	74	67	77	76	73.3	82	65	.591	.756	.711	.723
	4	29.780	29.700	29.650	29.710	71	79	75	74	82	78	78.6	85	71	.718	.849	.835	.831
	5	29.767	29.715	29.618	29.700	75	79	71	76	81	73	76.7	81	71	.854	.866	.831	.844
	6	29.713	29.638	29.545	29.632	63	73	66	65	75	68	69.3	78	63	.549	.724	.694	.707
	7	29.651	29.668	29.625	29.648	65	74	70	66	76	63	68.3	80	65	.604	.812	.808	.807
	8	29.653	29.518	29.468	27.543	62	63	62	64	65	64	64.3	73	62	.529	.549	.638	.574
	9	29.625	29.633	29.728	29.662	66	70	67	68	72	71	70.3	74	65	.612	.736	.692	.710
	10	29.701	29.718	29.625	29.681	63	69	73	66	72	76	71.3	76	63	.536	.662	.711	.674
	11	29.592	29.640	29.608	29.613	74	75	69	77	76	71	74.7	78	69	.799	.864	.831	.831
	12	29.841	29.913	29.865	29.873	58	71	67	60	72	70	67.3	73	58	.456	.745	.693	.677
	13	29.935	30.008	29.820	29.921	64	75	71	67	77	77	73.7	78	61	.556	.841	.813	.822
	14	29.918	29.790	29.782	29.830	71	82	74	74	85	77	78.7	86	73	.718	1.061	.748	.735
	15	29.900	30.013	29.958	29.957	66	72	68	68	74	71	71.0	77	66	.612	.757	.644	.685
	16	30.053	29.943	29.698	29.865	60	70	65	62	73	68	67.7	76	60	.491	.623	.571	.595
	17	29.773	29.608	29.667	29.683	69	67	56	72	70	59	67.0	75	56	.628	.623	.462	.542
	18	29.737	29.902	29.854	29.831	50	52	48	52	55	50	52.3	58	48	.334	.349	.482	.454
	19	30.022	29.966	29.921	29.970	43	58	55	46	61	58	55.0	63	43	.238	.443	.472	.384
	20	30.014	29.806	29.728	29.869	53	67	61	56	70	64	63.3	72	53	.363	.623	.457	.527
	21	29.894	29.838	29.768	29.833	60	66	62	63	69	65	65.7	70	60	.478	.599	.516	.561
	22	29.884	29.806	29.878	29.856	61	67	62	63	70	65	66.0	71	60	.510	.623	.536	.585
	23	29.994	29.956	29.841	29.930	58	67	65	71	70	67	68.0	70	58	.443	.623	.591	.605
	24	29.806	29.673	29.561	29.680	66	67	65	69	70	68	69.6	72	63	.529	.623	.571	.595
	25	29.638	29.711	29.748	29.699	61	67	60	64	70	62	65.3	71	60	.497	.623	.491	.574
	26	29.967	30.019	30.034	30.007	52	54	47	55	57	50	51.0	63	47	.349	.578	.463	.514
	27	30.204	30.064	29.992	30.087	42	61	58	45	63	60	56.0	64	42	.228	.510	.463	.434
	28	30.059	30.004	29.946	30.003	55	64	61	57	67	64	62.7	67	54	.407	.556	.497	.517
	29	29.904	29.795	29.688	29.796	59	73	66	62	75	69	68.7	76	59	.460	.724	.648	.691
	30	29.622	29.646	29.544	29.604	59	60	55	61	63	57	60.3	69	55	.473	.478	.457	.475
Means....		29.802	29.769	29.721	29.764	.....	.....	.....	61.8	62.8	64.5	65.0	.....	.....	.521	.656	.553	.577
Oct.	1	29.577	29.524	29.484	29.518	51	63	55	53	65	58	58.7	66	51	.348	.549	.393	.430
	2	29.553	29.637	29.699	29.630	46	72	50	49	55	53	52.3	58	49	.271	.349	.391	.374
	3	29.710	29.657	29.584	29.650	44	48	47	46	51	50	49.0	55	45	.262	.296	.287	.277
	4	29.624	29.622	29.632	29.626	43	45	48	45	47	51	47.7	51	43	.251	.273	.286	.274
	5	29.707	29.611	29.780	29.699	45	50	48	48	51	50	49.7	51	45	.260	.348	.303	.324
	6	29.965	30.002	29.880	29.949	48	57	51	50	60	54	54.7	62	44	.309	.426	.383	.404
	7	29.740	29.746	29.646	29.711	56	68	60	59	70	62	63.7	71	54	.409	.656	.491	.551
	8	29.651	29.746	29.647	29.681	55	62	52	58	55	55	56.6	62	52	.393	.349	.349	.366
	9	29.742	29.624	29.574	29.647	48	65	63	51	67	66	61.3	68	48	.296	.591	.536	.474
	10	29.754	29.664	29.754	29.724	60	67	60	62	70	63	65.0	70	60	.491	.623	.473	.547
	11	29.782	29.717	29.499	29.666	51	57	60	54	60	62	58.7	63	51	.325	.478	.491	.477
	12	29.737	29.870	29.857	29.721	45	45	47	47	48	50	48.3	64	45	.273	.293	.283	.287
	13	29.923	29.867	29.700	29.830	42	41	40	44	49	41	44.7	50	40	.241	.153	.186	.159
	14	29.588	29.520	29.400	29.503	38	51	50	40	54	53	49.0	54	37	.203	.325	.321	.314
	15	29.367	29.400	29.451	29.406	47	45	46	50	47	48	48.3	53	45	.283	.273	.284	.279
	16	29.755	29.845	29.772	29.791	40	45	43	43	47	46	45.3	49	40	.282	.273	.284	.279
	17	29.915	29.756	29.622	29.764	37	45	45	39	53	47	46.3	53	37	.194	.194	.273	.279
	18	29.615	29.507	29.507	29.543	45	55	52	48	58	54	53.3	57	45	.260	.325	.322	.324
	19	29.075	29.007	28.880	28.987	53	50	45	55	52	48	51.7	55	48	.376	.324	.322	.324
	20	29.125	29.253	29.378	29.252	45	45	42	47	48	44	46.3	51	41	.273	.260	.247	.254
	21	29.581	29.618	29.757	29.650	40	45	40	43	46	43	44.0	47	40	.202	.273	.247	.254
	22	29.861	29.795	29.661	29.772	37	50	44	38	53	47	46.0	51	37	.207	.321	.249	.279
	23	29.671	30.008	30.001	29.893	43	43	39	45	45	41	43.7	45	38	.251	.251	.242	.247
	24	30.123	30.171	30.133	30.142	39	40	35	40	43	37	40.0	45	36	.225	.206	.174	.214
	25	30.128	29.993	29.761	29.961	33	48	42	35	50	45	43.3	50	31	.162	.325	.228	.254
	26	29.863	30.008	30.004	29.958	42	40	32	45	42	35	40.7	47	32	.228	.291	.142	.195
	27	29.923	29.802	29.626	29.784	32	32	32	34	33	35	34.0	36	32	.155	.162	.142	.151
	28	29.316	29.304	29.666	29.429	40	40	35	41	43	37	40.3	43	34	.235	.296	.175	.227
	29	29.834	29.848	30.041	29.921	31	39	37	33	42	40	38.3	43	31	.151	.199	.151	.171
	30	30.238	30.075	29.988	30.100	38	44	38	40	46	40	42.0	47	38	.203	.282	.203	.230
	31	29.913	29.964	29.922	29.933	40	43	41	43	46	44	44.3	48	40	.202	.282	.218	.234
Means....		29.721	29.718	29.687	29.708	.....	.....	.....	45.9	51.4	48.3	48.5	.....	.....	.263	.291	.247	.260

the northern and northwestern lakes, at Fort Niagara, New York.

VAPOR.				WIND.							Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.					7 a. m.	2 p. m.	9 p. m.
8903	854	949	902	S.	S.	S.	4	2	2	2.7	South	10	10	10		.10
8836	852	846	845	SW	NW	S.	2	25	2	8.0	N. 53 W.	10	10	10		
8893	862	906	887	SW	NE	SW	2	35	25	2.7	N. 45 E.	10	10	10		
8836	870	863	863	S.	SW	S.	4	2	2	2.5	S. 11 W.	10	6	10		
9352	911	902	922	SW	W.	N.	4	12	25	9.0	N. 33 W.	6	10	10		
8890	904	895	896	SW	W.	W.	4	25	45	24.0	S. 68 W.	10	6	10		
9445	906	854	902	SW	W.	W.	25	2	4	9.7	S. 53 W.	8	7	10		
8888	890	888	889	NE	NE	NE	45	60	25	50.0	N. 45 E.	10	10	10		.73
8895	900	802	899	W.	W.	W.	2	12	2	5.3	West	7	10	10		
8838	852	860	850	W.	N.	S.	2	25	4	7.3	N. 6 W.	10	8	10		.04
8662	932	899	904	SW	W.	S.	25	2	12	11.7	S. 34 W.	10	6	10		
8820	950	818	893	SW	NE	NE	4	35	12	14.3	N. 45 E.	7	8	10		
8841	907	731	826	W.	NW	S.	2	25	4	8.0	N. 56 W.	7	8	10		
8856	874	862	864	SW	NW	SW	12	25	4	10.0	N. 78 W.	8	10	10		
8895	903	850	883	N.	NW	NE	45	25	25	26.8	North	7	8	10		
8844	854	813	860	SW	N.	S.	2	25	35	3.8	S. 7 W.	8	7	10		
8852	848	819	840	S.	NE	NE	45	60	75	36.0	N. 62 E.	7	10	10		1.10
8861	805	856	841	NE	NE	NE	75	45	25	57.0	N. 45 E.	10	10	10		
88767	825	816	803	SW	W.	S.	4	12	35	13.3	S. 21 W.	8	7	10		
8809	848	833	830	SW	W.	S.	4	12	25	10.3	S. 27 W.	7	10	10		
8831	846	836	838	S.	W.	W.	12	4	2	5.7	S. 60 W.	10	10	10		
8896	843	836	857	SW	SW	N.	2	4	2	1.7	S. 62 W.	10	8	10		
8825	848	893	855	W.	N.	NW	2	12	4	5.0	N. 19 W.	10	10	10		
8846	848	843	846	SW	NW	S.	25	35	35	17.0	S. 56 W.	10	10	10		.82
8833	848	884	855	NW	W.	N.	45	4	45	28.0	N. 25 W.	10	7	10		
8805	812	786	801	NE	NE	SE	4	25	2	9.7	N. 48 E.	10	10	10		
88762	866	880	843	SW	NE	NE	4	25	4	8.3	N. 45 E.	7	8	10		
8874	841	833	819	S.	N.	S.	2	12	4	2.0	North	8	9	10		
8828	904	846	859	S.	S.	SW	25	35	25	26.3	S. 12 W.	8	10	10		
8832	831	874	862	SW	S.	S.	4	25	25	17.7	S. 3 W.	10	10	10		
8837	867	853	859							2.4	N. 2 E.	8.8	8.8	10.0		2.78
8864	890	816	857	S.	S.	N.	35	45	60	6.7	South	10	10	10		.10
8881	805	798	795	N.	W.	W.	25	35	60	33.0	N. 75 W.	10	10	10		
8843	790	786	806	W.	NW	N.	4	45	60	32.7	N. 21 W.	10	10	10		
8840	847	790	826	NW	NW	NE	45	60	60	40.3	N. 15 W.	10	10	10		
8877	929	856	854	NE	NW	NW	45	35	60	35.0	N. 20 W.	10	10	10		
8856	822	802	827	NW	W.	S.	25	4	12	7.3	N. 75 W.	10	7	10		
8819	898	884	867	S.	SW	SW	35	45	75	48.7	S. 35 W.	10	10	10		1.42
8816	805	805	809	SW	NE	NE	60	35	25			10	10	10		
8890	893	838	840	S.	SW	SW	2	25	45	23.7	S. 44 W.	10	7	10		
8884	848	831	854	SW	N.	N.	35	2	12	9.0	S. 67 W.	8	7	10		
8802	822	884	836	NE	E.	W.	35	4	35	8.3	N. 15 W.	10	8	10		
8847	777	786	803	N.	NE	N.	60	35	45	44.0	N. 11 E.	10	10	10		
8836	439	912	729	S.	NW	SW	4	25	35	14.7	S. 75 W.	10	10	10		
8820	802	798	807	S.	NW	NW	12	35	25	17.3	N. 54 W.	10	10	10		
8886	847	850	828	NW	N.	NW	25	60	75	49.3	N. 28 W.	10	10	10		
8850	847	767	788	SW	W.	W.	45	25	45	35.3	S. 73 W.	10	10	10		
8816	893	847	848	S.	SW	NE	4	2	12	2.7	N. 63 E.	10	10	10		
8877	816	867	820	S.	SW	S.	4	25	12	12.7	S. 28 W.	10	10	10		.78
8869	861	777	836	SW	W.	W.	25	45	60	41.3	S. 82 W.	10	10	10		.14
8847	777	836	820	W.	NW	W.	45	60	75	56.0	N. 75 W.	10	10	10		
8850	921	750	507	W.	NW	NW	45	35	60	43.7	N. 59 W.	10	10	10		
8805	798	772	825	W.	SW	W.	2	12	45	18.7	S. 81 W.	8	7	10		
8840	840	824	835	W.	NW	NW	35	12	35	25.3	N. 64 W.	10	8	10		
8810	750	807	822	NW	NW	N.	4	35	12	16.0	N. 35 W.	8	10	10		
8897	856	762	805	SW	NE	NE	4	25	45	22.0	N. 45 E.	10	8	10		
88762	829	698	763	NE	NE	NE	60	60	75	65.0	N. 45 E.	10	10	10		.30
8892	893	698	794	NE	NE	NE	60	75	75	70.0	N. 45 E.	10	10	10		.48
8812	750	807	826	W.	W.	W.	25	12	45	27.3	West	10	10	10		.10
8800	744	732	759	W.	W.	W.	4	35	4	14.3	West	8	8	10		
8820	843	820	828	S.	S.	SW	2	12	25	12.0	S. 29 W.	10	10	10		.04
8850	767	756	758	S.	S.	SW	35	25	12	23.0	S. 7 W.	10	10	10		
8821	819	805	815							13.5	N. 52 W.	9.7	9.3	10.0		3.36



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.	TEMPERATURE—FAHRENHEIT.												VAPOR.					
						Wet bulb, or point of evaporation.		Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.					
						7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.						°	°	°	°	°	°	°	°						
Nov.	1	30.077	30.024	29.746	29.949	38	49	44	41	51	45	45.7	51	38	190	321	273	255	
	2	29.721	29.781	29.805	28.769	51	49	41	53	51	44	49.3	55	41	348	321	218	28	
	3	29.801	29.846	29.685	29.777	35	45	42	37	48	45	43.3	48	35	178	260	224	18	
	4	29.605	29.531	29.341	29.492	40	48	42	42	50	44	45.3	50	40	221	309	241	271	
	5	29.524	29.625	29.754	29.634	35	33	32	37	35	34	35.3	45	32	178	162	158	16	
	6	29.496	29.354	29.596	29.482	36	39	40	38	41	40	39.7	42	30	186	212	242	23	
	7	30.034	30.251	30.118	30.134	31	29	35	30	31	35	32.0	42	35	162	137	304	18	
	8	30.229	29.993	29.751	29.991	27	41	45	30	43	47	40.0	47	25	113	231	273	28	
	9	30.004	30.203	30.228	30.012	40	42	35	43	44	38	41.7	48	35	208	241	165	26	
	10	29.922	30.316	30.395	30.211	30	29	28	32	31	30	31.0	38	28	151	137	138	18	
	11	30.453	30.369	30.302	30.375	27	33	27	28	35	28	30.3	36	27	136	162	138	16	
	12	30.122	30.113	29.916	30.050	26	47	40	28	50	43	40.3	52	27	117	283	208	38	
	13	29.908	29.728	29.644	29.760	38	55	43	40	57	46	47.7	57	40	203	407	232	22	
	14	29.755	29.600	29.709	29.688	45	60	45	47	63	48	52.7	63	45	273	478	280	37	
	15	29.689	29.638	29.608	29.645	48	58	47	50	61	50	53.7	62	47	313	443	283	30	
	16	29.828	29.700	29.478	29.692	48	65	57	50	67	60	59.0	67	47	303	591	428	44	
	17	29.596	29.628	29.860	29.695	60	53	43	62	56	46	54.7	64	43	491	363	238	34	
	18	29.898	29.860	29.858	29.872	39	37	36	41	40	39	40.0	47	37	212	181	173	12	
	19	29.873	29.900	29.917	29.897	38	40	35	40	44	38	40.7	47	35	203	195	165	12	
	20	29.959	29.866	29.734	29.853	30	45	34	31	47	37	38.3	47	34	155	273	157	15	
	21	29.637	29.556	29.374	29.522	38	39	34	40	41	37	39.3	44	34	203	212	157	19	
	22	29.379	29.312	29.294	29.328	34	32	34	37	35	37	36.3	37	34	157	142	157	12	
	23	29.484	29.516	29.659	29.553	35	37	37	38	40	40	39.3	41	36	165	181	181	17	
	24	29.854	29.844	29.845	29.848	38	39	36	40	41	39	40.0	41	36	203	212	173	18	
	25	29.853	29.818	29.838	29.836	38	39	40	40	43	43	42.0	43	38	203	173	208	19	
	26	29.916	29.863	29.836	29.872	40	41	35	42	44	38	41.3	45	38	221	218	163	21	
	27	29.796	29.756	29.858	29.803	34	35	33	36	38	36	36.7	42	35	170	165	149	16	
	28	29.994	30.096	29.864	29.985	27	29	26	30	32	28	30.0	36	26	113	126	117	11	
	29	29.752	29.767	29.591	29.703	24	37	34	28	40	37	35.0	40	25	083	121	157	14	
	30	29.591	29.265	29.200	29.352	38	43	38	40	46	41	42.3	47	35	203	238	190	210	
Means....		29.827	29.797	29.760	29.794	....	....	....	39.0	44.8	40.4	41.4	....	....	202	252	202	219	
Dec.	1	29.238	29.335	29.480	29.351	33	31	31	35	34	34	34.3	41	31	162	139	134	147	
	2	29.458	29.326	29.392	29.392	31	41	42	34	43	45	40.7	45	32	138	211	225	129	
	3	29.803	29.771	29.738	29.771	35	41	42	38	43	44	41.7	48	37	165	231	241	212	
	4	29.791	29.863	29.935	29.863	54	48	40	56	50	43	49.7	57	40	391	309	208	30	
	5	30.158	30.120	30.148	30.142	27	34	27	31	36	30	32.3	45	27	101	170	113	12	
	6	29.970	29.855	29.617	29.807	24	40	32	27	42	35	34.7	42	24	095	221	142	153	
	7	29.488	29.556	29.840	29.628	37	32	26	38	35	28	33.7	39	26	207	142	117	153	
	8	29.981	30.063	30.090	30.045	26	30	28	28	33	31	30.7	33	26	117	132	119	123	
	9	29.886	29.710	29.529	29.708	27	31	33	25	33	36	30.3	36	25	124	151	149	141	
	10	29.501	29.698	29.527	29.575	30	35	37	32	36	40	36.0	44	30	144	191	181	172	
	11	29.646	29.642	29.631	29.640	38	45	39	40	48	42	43.3	48	39	203	260	199	221	
	12	29.511	29.390	29.632	29.511	42	55	42	44	56	45	48.3	56	39	241	430	298	286	
	13	30.108	30.017	29.907	30.011	24	23	20	24	25	23	24.0	45	20	128	100	074	101	
	14	29.950	29.911	29.890	29.917	20	....	12	17	14	15	15.3	25	12	074	....	141	107	
	15	30.062	30.009	29.963	30.011	9	19	10	12	22	13	15.7	22	10	031	069	034	045	
	16	30.012	29.924	29.824	29.920	10	17	12	12	20	15	15.7	21	10	046	060	041	049	
	17	29.840	29.951	29.942	29.911	16	29	22	19	32	25	25.3	34	15	056	126	084	089	
	18	29.953	29.820	29.589	29.787	28	32	20	30	34	33	32.3	33	25	130	155	074	120	
	19	29.328	29.373	29.506	29.402	42	40	33	45	42	36	41.0	45	32	228	221	149	198	
	20	29.973	29.712	29.284	29.656	22	22	19	25	24	21	23.3	36	17	084	095	080	086	
	21	29.371	29.711	29.965	29.682	16	20	17	19	23	20	20.7	25	18	056	074	060	063	
	22	29.869	29.983	30.147	30.000	11	16	14	13	18	16	15.7	23	11	049	067	042	051	
	23	30.270	30.255	29.952	30.159	8	21	12	10	24	15	16.3	25	8	040	079	041	053	
	24	29.605	29.308	29.263	29.392	32	35	34	35	38	37	36.7	39	12	142	165	157	153	
	25	29.504	29.517	29.644	29.555	35	40	35	38	43	38	39.7	43	35	165	208	165	173	
	26	29.591	29.555	29.440	29.529	33	38	35	35	40	38	37.7	42	33	162	203	165	177	
	27	29.373	29.760	29.877	29.670	36	34	31	37	36	33	35.3	40	31	199	170	151	173	
	28	29.810	29.757	29.798	29.788	30	30	30	31	33	31	31.7	35	30	155	152	155	147	
	29	30.077	30.180	30.192	30.150	27	25	23	30	28	26	28.0	33	23	113	100	089	101	
	30	30.095	29.877	29.982	29.985	19	26	24	21	28	27	25.3	30	19	080	117	095	097	
	31	30.005	29.850	29.820	29.885	22	38	33											

e northern and northwestern lakes, at Fort Niagara, New York.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.738	.859	.920	.839	S.....	S.....	SW....	2	12	25	12.0	S. 29 W.	10	10	10		
.864	.859	.756	.826	SW....	SW....	SW....	35	25	12	24.0	S. 45 W.	10	10	10		
.807	.777	.762	.782	S.....	S.....	S.....	4	4	12	6.7	South...	8	10	10		
.829	.856	.836	.848	S.....	SW....	S.....	85	4	12	13.3	S. 4 W..	10	10	10		.28
.807	.797	.792	.799	NW....	NW....	NW....	60	75	75	70.0	N. 45 W.	10	10	10		
.811	.824	1.000	.878	S.....	S.....	NW....	35	60	90	57.0	S. 22 W.	10	10	10		
.896	.738	1.000	.895	NW....	NW....	NW....	45	4	12	20.3	N. 45 W.	10	8	10		
.675	.833	.847	.785	S.....	S.....	SW....	2	4	35	13.0	S. 39 W.	10	10	10		
.750	.836	.719	.768	SW....	NW....	NW....	45	60	75	47.7	N. 63 W.	10	10	10		
.800	.788	.782	.790	NW....	N.....	NW....	35	25	4	19.7	N. 28 W.	10	10	10		
.883	.797	.883	.854	SW....	NE....	NE....	25	35	12	7.3	N. 45 E.	10	7	10		
.768	.786	.750	.768	SW....	SW....	S.....	25	35	25	26.7	S. 32 W.	10	8	10		
.820	.874	.767	.820	SW....	SW....	SW....	35	45	25	35.0	S. 45 W.	10	7	10		
.847	.831	.777	.818	S.....	S.....	S.....	45	35	12	30.7	South...	10	8	10		
.856	.825	.786	.822	S.....	S.....	S.....	12	35	25	24.0	South...	10	7	10		
.856	.893	.822	.857	S.....	S.....	SW....	12	35	45	28.7	S. 22 W.	8	6	10		
.884	.809	.767	.820	S.....	SW....	NW....	60	45	60	30.0	S. 56 W.	10	7	10		
.824	.732	.726	.761	N.....	NW....	NE....	35	35	12	23.3	N. 13 W.	10	10	10		
.820	.677	.719	.739	NW....	NE....	W.....	12	12	4	6.0	N. 13 W.	10	8	10		
.893	.847	.712	.817	S.....	SW....	E.....	4	2	12	4.0	S. 63 E..	10	6	10		
.820	.824	.712	.789	SE....	SW....	NE....	4	25	35	3.3	N. 65 E.	10	10	10		.45
.712	.698	.712	.707	W.....	NW....	SW....	60	60	75	52.0	S. 86 W.	10	10	10		
.719	.732	.732	.728	N.....	NW....	NW....	90	60	25	56.3	N. 18 W.	10	10	10		
.820	.824	.726	.790	N.....	NW....	SW....	45	12	4	17.3	N. 13 W.	10	8	10		
.820	.597	.750	.722	S.....	NE....	NW....	2	4	25	8.0	N. 38 W.	10	10	10		
.829	.756	.719	.768	NW....	W.....	W.....	25	4	12	12.7	N. 62 W.	10	8	10		
.802	.719	.705	.742	SW....	W.....	NW....	25	60	75	45.0	N. 75 W.	10	10	10		
.675	.694	.768	.712	NW....	N.....	NE....	4	25	12	12.3	N. 9 E..	10	16	10		
.543	.732	.712	.662	NE....	S.....	SE....	25	12	25	12.3	S. 71 E.	10	8	10		
.820	.767	.738	.775	SE....	S.....	SE....	25	12	25	19.7	S. 37 E.	10	10	10		.22
.799	.797	.786	.794	.....	.....	.....	.....	.....	.....	11.3	S. 84 W.	9.9	8.8	10.0	.....	.95
.797	.712	.712	.740	SW....	S.....	SW....	60	45	4	34.0	S. 25 W.	10	10	10		
.712	.833	.762	.769	S.....	SW....	S.....	25	25	3	19.0	S. 25 W.	10	10	10		
.719	.833	.836	.796	W.....	NE....	NE....	4	55	4	12.0	N. 40 E.	10	10	10		.42
.872	.856	.750	.826	SW....	W.....	N.....	35	45	12	24.0	S. 80 W.	10	10	10		
.582	.802	.675	.686	NW....	SW....	SW....	60	12	12	24.3	N. 54 W.	10	8	10		
.644	.829	.698	.724	SW....	SW....	S.....	4	12	4	3.3	S. 36 W.	10	8	10		
.905	.698	.768	.790	NE....	NW....	NW....	45	75	60	47.0	N. 26 W.	10	10	10		
.768	.703	.685	.719	W.....	W.....	SE....	45	35	12	24.0	S. 83 W.	10	4	10		
.775	.800	.705	.760	SW....	W.....	W.....	4	4	12	6.3	S. 82 W.	10	10	10		
.794	.900	.732	.809	SW....	S.....	SW....	25	35	25	26.0	S. 27 W.	10	10	10		
.820	.777	.744	.780	S.....	S.....	SE....	12	4	4	6.3	S. 8 E..	10	7	10		.12
.836	.935	.762	.844	S.....	S.....	NW....	25	35	45	14.0	S. 49 W.	10	10	10		
1.000	.746	.598	.781	SW....	SW....	SW....	35	25	35	31.0	S. 45 W.	10	10	10		
.598	.....	.475	.536	W.....	SW....	W.....	45	60	75	22.0	S. 75 W.	10	10	10		
.418	.584	.438	.480	W.....	SW....	SW....	25	12	4	13.0	S. 73 W.	10	7	10		
.610	.556	.475	.547	SW....	SE....	E.....	4	12	4	5.0	S. 39 E.	10	10	10		
.541	.694	.622	.619	SE....	SE....	SE....	12	4	12	9.3	S. 45 E.	10	7	10		
.782	.792	.598	.724	SE....	E.....	E.....	4	12	2	5.7	S. 82 E..	10	10	10		
.762	.829	.705	.765	SW....	SW....	NW....	12	35	60	25.3	N. 83 W.	10	10	10		
.622	.738	.712	.691	NW....	NW....	E.....	25	35	60	15.3	N. 22 E.	10	10	10		
.541	.598	.556	.565	NW....	SW....	NW....	75	45	25	36.7	N. 69 W.	10	10	10		
.623	.682	.509	.605	W.....	NW....	SW....	25	45	12	23.3	N. 70 W.	10	7	10		
.582	.610	.475	.556	NW....	SW....	E.....	25	4	12	5.7	N. 29 W.	10	10	10		
.698	.719	.712	.710	S.....	S.....	SW....	45	35	25	33.0	S. 10 W.	10	8	10		
.719	.750	.719	.729	S.....	S.....	SW....	60	55	12	34.0	S. 5 W..	10	7	10		
.797	.820	.719	.179	NE....	W.....	S.....	25	4	4	6.3	N. 45 E.	10	10	10		.70
.903	.802	.800	.835	NW....	W.....	W.....	35	25	4	19.7	N. 65 W.	10	10	10		
.893	.703	.893	.830	W.....	NE....	NW....	4	2	25	9.3	N. 47 W.	10	1	10		
.675	.655	.634	.655	W.....	W.....	E.....	60	25	12	24.3	West...	10	8	10		
.712	.768	.644	.708	NE....	W.....	S.....	45	25	4	9.3	N. 14 E.	10	10	10		
.738	.820	.705	.754	S.....	S.....	S.....	12	35	25	24.0	South...	10	8	10		
.724	.751	.671	.713	.....	.....	.....	.....	.....	.....	12.5	S. 72 W.	10.0	8.7	10.0	.....	1.24



*Reductions of the monthly meteorological register of the survey*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOUR			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity, in U. S. inches and decimals.			
					7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.																		
Jan.	1	29.831	29.855	29.957	29.881	33	35	24	35	37	26	32.7	37	24	.162	.172	.144	.159
	2	30.015	29.979	29.793	29.929	19	30	21	21	32	23	25.3	33	19	.080	.144	.090	.105
	3	29.813	29.715	29.670	29.733	21	23	31	23	25	34	27.3	35	22	.090	.100	.132	.107
	4	29.649	29.788	29.957	29.798	22	16	7	25	17	10	17.3	26	7	.024	.078	.086	.029
	5	30.055	30.013	30.025	30.031	....	10	10	5	12	13	10.0	15	7	....	.046	.034	.044
	6	30.203	30.103	29.742	30.016	13	16	7	15	18	10	14.3	17	7	.056	.067	.038	.050
	7	30.539	30.735	30.863	30.712	....	....	....	5	1	1	2.3	12	3	....	....	....	....
	8	30.957	30.947	30.897	30.934	....	4	0	1	7	2	33.0	9	0	....	.018	.021	.019
	9	30.577	30.674	30.495	30.582	0	20	....	4	21	0	8.3	24	0	....	.096	....	.09
	10	30.517	30.326	30.092	30.312	10	22	25	12	24	28	21.3	29	10	.046	.095	.106	.081
	11	29.855	29.803	29.817	29.825	26	33	30	28	35	32	31.7	34	26	.117	.162	.144	.141
	12	29.726	29.538	29.394	29.553	29	31	32	31	33	35	33.0	35	31	.137	.151	.142	.143
	13	29.288	29.422	29.672	29.461	35	34	19	38	56	22	32.0	40	19	.165	.170	.069	.134
	14	30.118	30.221	30.293	30.210	4	3	2	7	3	5	5.0	22	2	.018	.050	.014	.027
	15	30.243	30.017	29.624	29.962	4	7	9	7	10	12	9.7	13	4	.018	.036	.031	.021
	16	29.258	29.492	29.607	29.452	31	24	20	33	26	23	27.3	33	12	.151	.106	.074	.109
	17	29.658	29.508	29.575	29.580	21	29	31	22	31	33	28.3	34	20	.101	.137	.151	.129
	18	29.588	29.612	29.667	29.622	27	37	29	29	40	31	33.3	42	27	.124	.181	.137	.147
	19	29.528	29.640	29.580	29.582	31	33	33	33	35	36	34.7	37	30	.151	.162	.142	.151
	20	29.358	29.763	29.883	29.671	45	18	7	48	20	10	26.0	48	7	.260	.076	.036	.108
	21	29.905	29.833	29.825	29.854	....	12	7	5	15	10	10.0	16	4	.034	.141	.026	.067
	22	29.798	29.933	29.967	29.899	10	15	16	13	18	19	16.7	20	10	.034	.046	.056	.040
	23	30.015	29.990	30.037	30.014	8	20	14	11	22	17	16.7	23	8	.022	.085	.042	.054
	24	30.150	30.050	29.805	30.001	13	24	21	16	26	24	22.0	26	12	.044	.106	.079	.076
	25	29.505	29.425	29.640	29.523	21	28	22	24	30	25	26.2	30	21	.079	.130	.084	.098
	26	29.675	29.750	29.772	29.732	19	20	21	22	23	24	23.0	26	21	.069	.085	.072	.075
	27	29.895	29.993	29.925	29.938	21	22	18	24	25	20	23.0	25	18	.079	.024	.076	.059
	28	29.833	29.760	29.713	29.769	16	21	20	18	24	22	21.3	25	16	.067	.079	.085	.077
	29	29.768	29.705	29.728	29.730	21	30	25	24	32	28	28.0	32	21	.079	.144	.100	.109
	30	29.494	29.428	29.563	29.495	29	33	30	32	35	33	33.3	37	27	.126	.162	.132	.140
	31	29.490	29.455	29.256	29.400	19	....	....	22	27	19	22.7	34	19	.069	....	....	.06
Means....		29.881	29.886	29.866	29.877	....	....	....	22.4	23.9	20.2	33.1	....	....	.091	.107	.080	.091
Feb.	1	29.211	29.365	29.382	29.319	22	19	17	25	21	20	22.0	25	17	.084	.080	.060	.075
	2	29.358	29.395	29.428	29.394	17	21	18	19	23	20	20.7	24	17	.071	.090	.076	.077
	3	29.500	29.508	29.590	29.533	13	16	12	15	18	15	16.0	22	12	.056	.067	.041	.053
	4	29.595	29.683	29.947	29.742	6	11	10	9	14	13	12.0	18	6	.023	.037	.034	.030
	5	30.259	30.241	30.035	30.178	4	13	11	6	15	13	11.3	15	4	.030	.056	.049	.045
	6	30.055	30.348	30.301	30.235	16	14	9	18	16	11	15.0	19	9	.067	.059	.043	.056
	7	30.093	30.023	29.935	30.017	7	25	27	10	28	30	22.7	30	7	.026	.100	.113	.080
	8	29.843	29.750	29.723	29.772	25	30	23	27	32	26	28.3	32	23	.112	.144	.089	.113
	9	29.757	29.700	29.510	29.656	21	28	24	23	31	27	27.0	32	21	.090	.119	.095	.101
	10	29.490	29.568	29.562	29.540	34	40	34	37	43	37	39.0	43	27	.157	.208	.157	.174
	11	29.570	29.585	29.690	29.615	32	30	22	35	33	25	31.0	36	22	.142	.132	.084	.123
	12	29.927	29.950	29.845	29.907	25	24	27	28	27	30	28.3	30	24	.100	.095	.113	.103
	13	29.857	29.913	29.835	29.868	25	29	28	28	31	30	29.7	32	24	.100	.137	.130	.122
	14	29.422	29.338	29.292	29.351	26	34	27	29	37	30	32.0	38	26	.106	.157	.113	.125
	15	29.571	29.763	29.975	29.770	1	8	5	4	10	8	7.3	31	3	.012	.040	.021	.024
	16	30.245	30.278	30.137	30.220	....	4	3	....	6	7	18.0	9	5	....	.030	.016	.021
	17	30.122	30.075	29.935	30.044	12	30	29	15	33	31	26.3	34	5	.041	.132	.137	.103
	18	29.897	29.823	29.518	29.746	24	32	31	27	35	34	32.0	35	24	.095	.142	.139	.125
	19	29.330	29.305	29.400	29.345	30	34	28	33	36	31	33.3	36	28	.132	.170	.112	.140
	20	29.560	29.637	29.907	29.701	22	27	20	25	30	23	26.0	33	20	.084	.113	.074	.090
	21	30.103	30.070	29.963	30.045	8	34	33	11	36	35	27.3	35	8	.028	.170	.162	.130
	22	29.875	29.850	29.906	29.877	42	50	43	45	53	46	38.0	52	35	.228	.321	.238	.292
	23	29.875	29.687	29.455	29.672	38	49	45	40	51	47	46.0	52	37	.203	.321	.273	.296
	24	29.310	29.405	29.683	29.468	45	31	29	48	34	31	37.7	51	29	.260	.139	.137	.179
	25	29.913	30.098	30.235	30.082	13	14	9	15	16	12	14.3	33	9	.056	.059	.031	.049
	26	30.381	30.413	30.221	30.338	6	16	15	8	18	17	14.3	19	6	.034	.067	.063	.055
	27	30.027	30.130	30.129	30.095	18	31	26	20	34	28	27.3	35	16	.076	.139	.117	.111
	28	30.155	30.065	29.923	30.048	22	31	30	26	33	32	30.3	35	22	.107	.151	.144	.134
Means....		29.796	29.820	29.802	29.806	....	....	....	23.7	28.3	24.9	25.6	....	....	.093	.012	.102	.106

northern and northwestern lakes, at Fort Niagara, New York.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation. In U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
797	807	754	769	SW	W	W	25	35	60	38.0	S. 9 W.	10	10	10		
712	794	730	745	W	W	S	4	2	2	2.3	S. 73 W.	10	8	10		
730	746	712	729	W	W	W	2	4	4	3.3	West	10	10	10		
622	834	377	611	NW	NW	NW	60	45	60	55.0	N. 45 W.	10	10	10		
	610	438	524	W	W	SW	12	35	45	28.3	S. 68 W.	10	10	10		
648	682	377	569	W	SE	SE	4	12	35	14.7	S. 41 E.	10	8	10		
			N	N	NE		45	35	35	35.7	N. 13 E.	10	10	10		
	308	438	373	NE	N	N	25	12	4	12.7	N. 28 E.	10	10	10		
	855		855	SW	SW	SW	4	2	2	2.7	S. 45 W.	10	8	10		
610	738	655	668	S	SW	S	4	12	25	12.7	S. 13 W.	10	10	10		
768	797	794	786	SW	SW	S	25	4	4	10.7	S. 40 W.	10	8	10		
788	800	698	762	NE	SW	E	25	4	2	7.3	N. 48 E.	10	10	10		
719	802	584	702	W	W	NW	12	25	45	25.0	N. 65 W.	10	10	10		
308	1.000	253	520	W	W	NW	12	25	45	25.0	N. 65 W.	10	8	10		
308	377	418	368	SE	NE	NE	12	35	45	27.0	N. 54 E.	10	10	10		
800	754	598	717	W	S	SW	45	35	25	27.3	S. 50 W.	10	10	10		
860	788	800	816	SW	SW	SW	12	25	35	24.0	S. 45 W.	8	10	10		
775	732	788	765	SW	SW	SW	2	12	2	5.3	S. 45 W.	10	7	10		
800	797	705	767	SW	S	N	4	2	2	1.3	S. 45 W.	10	10	10		
777	702	377	619	S	SW	SW	45	60	35	43.6	S. 31 W.	10	8	10		
438	475	377	430	S	S	S	45	35	25	35.0	South	10	7	10		
438	457	541	479	SW	W	NW	12	25	12	14.0	West	10	6	10		
398	721	509	543	S	SW	SE	4	4	4	3.2	South	10	8	10		
492	754	610	619	SE	NE	NE	12	35	45	27.0	N. 54 E.	10	10	10		
610	782	622	671	NE	N	W	60	60	45	34.0	N. 1 W.	10	10	10		
584	721	610	638	N	NW	N	25	4	25	14.3	N. 3 W.	10	10	10		
610	622	702	645	N	S	S	35	4	12	6.3	North	10	10	10		
682	610	721	671	S	SW	SW	4	2	12	5.7	S. 35 W.	9	10	10		
610	794	655	686	SE	SW	SW	2	2	4	2.1	S. 27 W.	10	10	10		
694	797	703	731	SE	SE	W	2	4	45	13.7	S. 84 W.	10	10	10		
584			584	S	W	W	4	25	35	20.3	S. 86 W.	7	6	10		
630	712	591	646							8.0	N. 58 W.	9.8	9.1	10.0		
622	712	556	630	NW	NW	NW	60	45	35	46.3	N. 45 W.	10	8	10		
692	730	702	704	SW	SW	NW	25	35	45	25.0	S. 82 W.	10	7	10		
648	682	475	602	S	SW	W	35	25	35	24.7	S. 45 W.	10	10	10		
356	457	438	417	SW	SW	W	4	60	25	28.0	S. 57 W.	10	10	10		
520	648	623	597	W	SW	SW	4	35	60	32.7	S. 47 W.	10	10	10		
682	659	596	646	W	W	SW	60	35	12	34.7	S. 86 W.	10	10	10		
377	655	675	569	SW	S	S	2	25	4	10.0	S. 3 W.	7	8	10		
761	794	634	730	SW	NE	NE	2	4	35	12.3	N. 45 E.	10	10	10		.18
730	685	644	686	SW	S	NE	4	2	4	0.7	South	10	7	10		
712	750	712	725	SW	SW	SW	4	2	2	2.7	S. 45 W.	10	7	10		.48
698	703	622	674	NE	N	NW	12	25	35	20.3	N. 16 W.	10	10	10		.96
655	044	675	658	N	NE	NW	25	45	60	33.3	N. 6 W.	10	10	10		
655	788	782	742	N	W	W	12	25	4	10.7	N. 68 W.	10	10	10		
665	712	675	684	N	W	W	4	25	35	19.0	N. 88 W.	10	10	10		
223	582	334	380	W	W	NW	25	35	75	41.7	N. 65 W.	10	10	10		
	520	281	401	SW	S	SW	12	35	45	28.7	S. 25 W.	10	8	10		
475	703	788	655	SW	SW	SW	25	45	60	43.3	S. 45 W.	10	8	10		
644	698	712	685	SW	SW	SW	12	4	25	13.7	S. 45 W.	10	10	10		
703	802	685	730	SW	SW	NW	4	12	35	13.0	N. 70 W.	10	10	10		
622	675	598	632	SW	SW	SW	45	25	12	27.3	S. 45 W.	10	6	10		
398	802	797	666	SW	W	SW	12	12	35	18.7	S. 54 W.	10	7	10		.18
762	798	767	776	SW	SW	W	45	35	45	38.7	S. 61 W.	5	4	7		
820	859	847	842	SW	S	SW	4	4	35	14.0	S. 41 W.	5	3	10		.22
777	712	788	759	SW	NW	NW	12	35	60	32.0	N. 52 W.	10	6	7		
648	659	418	575	NW	NW	NW	75	60	45	60.0	N. 45 W.	10	4	6		
553	682	671	635	NW	NW	NE	12	25	35	16.7	N. 2 W.	8	6	7		.18
702	712	768	727	SE	SW	SW	4	2	4	2.7	S. 7 W.	10	5	6		
864	800	794	819	E	E	SE	4	25	12	12.7	S. 77 E.	7	6	7		
625	701	640	655							12.9	S. 85 W.	9.3	4.3	9.3		2.20

Reductions of the monthly meteorological register of the survey.

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOUR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
					7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.			Mean.	7 a. m.	2 p. m.	9 p. m.	Mean.
1866.					°	°	°	°	°	°	°	°	°					
March	1	29.895	29.963	29.828	29.895	30	38	37	33	40	39	37.3	48	30	.132	.203	.194	.17
	2	29.913	29.795	29.645	29.784	35	40	37	37	43	39	39.7	44	37	.178	.206	.194	.16
	3	29.763	29.710	29.728	29.734	38	....	25	41	....	27	34.3	46	25	.190	....	.19	.15
	4	29.715	29.770	29.815	29.767	24	19	21	26	22	24	24.0	37	19	.106	.069	.079	.02
	5	29.917	29.883	29.838	29.879	19	25	24	22	28	26	25.3	31	18	.069	.100	.106	.08
	6	29.998	29.950	29.855	29.934	19	28	27	21	30	29	26.7	32	19	.080	.130	.124	.11
	7	29.783	29.649	29.683	29.705	19	21	18	22	24	20	22.0	30	18	.063	.079	.066	.02
	8	29.813	29.955	29.910	29.893	19	24	25	22	26	28	25.3	31	17	.069	.106	.100	.06
	9	29.815	29.721	29.928	29.821	21	22	20	23	24	22	23.0	28	17	.090	.095	.085	.07
	10	30.085	30.003	29.860	29.983	19	25	21	21	28	23	24.0	30	19	.080	.100	.080	.08
	11	29.523	29.296	29.498	29.439	32	39	38	35	41	40	38.7	42	20	.142	.212	.203	.16
	12	29.685	29.810	30.073	29.856	33	31	30	35	33	32	33.3	40	30	.162	.151	.144	.12
	13	29.947	30.085	30.163	30.065	31	30	31	33	32	33	32.7	35	30	.151	.144	.151	.16
	14	29.938	29.913	29.791	29.881	32	35	33	34	38	35	35.7	38	31	.155	.165	.162	.17
	15	29.825	29.923	29.490	29.746	32	31	30	34	33	32	33.0	35	30	.155	.151	.144	.12
	16	29.802	29.448	29.403	29.551	31	35	33	33	37	35	35.0	37	31	.151	.178	.162	.14
	17	29.573	29.738	29.803	29.705	13	11	8	15	14	10	13.0	30	8	.056	.037	.045	.04
	18	29.851	29.549	29.613	29.671	9	19	16	11	21	18	16.7	24	9	.043	.080	.067	.08
	19	29.800	29.855	29.803	29.819	16	22	21	19	25	23	22.3	26	16	.056	.084	.080	.07
	20	29.847	29.753	29.430	29.690	17	21	22	21	23	25	23.0	27	20	.049	.090	.084	.07
	21	29.198	29.493	29.725	29.472	30	32	22	33	35	25	31.0	35	32	.132	.142	.084	.12
	22	30.010	30.030	29.897	29.979	21	31	33	24	33	35	30.7	36	20	.079	.151	.162	.12
	23	29.695	29.605	29.620	29.640	28	32	32	31	35	34	33.3	35	27	.119	.142	.155	.12
	24	29.702	29.583	29.528	29.608	27	31	28	29	34	30	31.0	36	26	.124	.139	.130	.12
	25	29.550	29.570	29.575	29.565	13	17	11	15	20	13	16.0	22	11	.056	.060	.049	.02
	26	29.925	29.895	29.900	29.907	14	22	20	16	25	23	21.3	27	14	.059	.084	.074	.05
	27	30.200	30.168	30.103	30.157	20	30	32	22	33	34	29.7	35	20	.085	.132	.155	.12
	28	30.095	29.810	29.523	29.809	23	32	29	25	35	32	30.7	35	23	.100	.142	.136	.12
	29	29.492	29.573	29.658	29.574	31	32	29	33	34	31	32.7	35	28	.151	.155	.137	.16
	30	29.765	29.725	29.585	29.692	22	32	31	25	34	33	30.7	35	22	.084	.155	.155	.13
	31	29.405	29.198	29.465	29.356	32	37	34	35	40	36	37.0	42	31	.142	.181	.170	.19
Means...		29.792	29.755	29.734	29.793	....	....	....	26.6	30.8	28.6	28.7	....	....	.017	.130	.123	.01
April	1	29.895	29.993	29.925	29.871	32	38	35	35	41	37	37.3	43	32	.142	.190	.178	.17
	2	29.948	29.925	29.933	29.935	31	34	31	33	36	33	34.0	41	30	.151	.170	.151	.15
	3	29.958	29.993	29.830	29.927	33	35	33	35	37	35	35.7	38	31	.162	.162	.162	.162
	4	29.748	29.741	29.650	29.713	....	....	34	....	....	40	39.3	43	34	....	....	.118	.118
	5	29.578	29.640	29.655	29.624	....	67	62	....	70	65	55.0	71	36	....	.622	.516	.569
	6	29.903	29.925	29.955	29.928	36	37	33	38	40	35	37.7	47	33	.186	.181	.162	.17
	7	30.035	29.990	29.987	30.004	29	33	31	32	35	33	33.3	37	29	.126	.162	.151	.142
	8	29.923	29.960	29.933	29.939	28	34	33	30	36	35	33.7	38	28	.130	.170	.162	.154
	9	30.048	29.963	30.023	30.011	28	35	33	30	38	35	34.3	40	27	.130	.165	.162	.132
	10	29.915	29.928	29.883	29.909	32	50	33	35	53	36	41.3	53	30	.142	.321	.149	.204
	11	29.870	29.755	29.743	29.789	40	45	42	43	47	45	45.0	51	40	.208	.273	.228	.236
	12	29.738	29.638	29.400	29.592	41	65	58	44	68	60	57.3	70	41	.218	.577	.456	.417
	13	29.888	29.933	29.960	29.927	38	41	40	40	44	43	42.3	55	37	.203	.218	.202	.210
	14	29.801	29.778	29.658	29.746	34	38	33	37	40	35	37.3	45	33	.157	.203	.162	.174
	15	29.855	29.948	29.995	29.933	34	41	38	36	44	41	40.3	45	34	.170	.218	.190	.193
	16	29.923	29.910	29.938	29.924	35	38	37	37	41	40	39.3	42	34	.178	.190	.181	.183
	17	29.995	30.068	29.873	29.979	45	42	38	47	45	40	44.0	48	37	.273	.228	.203	.235
	18	30.035	29.933	29.978	29.982	45	71	57	47	74	60	60.3	74	42	.273	.718	.436	.472
	19	29.849	29.863	29.805	29.839	59	55	51	62	57	54	57.7	66	50	.460	.407	.335	.401
	20	29.813	29.550	29.503	29.622	42	52	58	45	54	60	53.0	64	42	.228	.362	.456	.349
	21	29.455	29.558	29.351	29.455	58	64	61	61	67	64	64.0	67	57	.443	.556	.497	.499
	22	29.308	29.301	29.428	29.346	41	52	42	43	55	45	47.7	58	40	.231	.349	.228	.289
	23	29.311	29.378	28.980	29.223	34	35	32	37	39	35	43.7	45	32	.157	.152	.142	.130
	24	29.142	29.052	29.228	29.141	29	35	34	32	38	36	35.3	41	29	.126	.168	.170	.155
	25	29.258	29.445	29.431	29.378	32	43	35	35	45	38	39.3	45	32	.142	.251	.165	.186
	26	29.561	29.688	29.643	29.631	32	41	40	35	43	42	40.0	45	32	.142	.231	.221	.192
	27	29.899	29.808	29.741	29.816	35	42	41	37	45	43	41.7	47	33	.178	.228	.231	.212
	28	29.591	29.411	29.508	29.503	39	44	42	41	46	44	43.7	47	38	.212	.262	.241	.224
	29	29.758	29.881	29.689	29.776	38	48	37	40	50	40	43.3	52	37	.203	.309	.181	.21
	30	29.773	29.878	29.658	29.770	35	43	42	37	46	45	42.7	50	34	.17			

northern and northwestern lakes, at Fort Niagara, New York.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimls.	Am't of rain or melted snow, in U. S. inches and decimls.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
703	.820	.816	.780	SE	NW	NW	2	4	2	1.3	N. 45 W.	6	5	8		
807	.750	.816	.791	W	NE	SW	4	25	2	7.0	N. 37 E.	8	6	7		
738		.761	.749	SW	W	NW	4	35	45	25.0	N. 67 W.	6	4	5		
754	.584	.610	.649	NW	NW	NW	35	60	75	56.7	N. 45 W.	6	7	5		
584	.655	.754	.664	NW	W	W	35	60	45	44.0	N. 79 W.	3	2	4		
712	.782	.775	.756	W	W	W	60	45	35	46.7	West	4	3	7		
584	.610	.702	.632	NW	W	NW	12	60	45	36.0	N. 68 W.	4	2	6		
584	.754	.655	.664	NW	W	NW	35	45	60	43.7	N. 59 W.	7	5	8		
730	.738	.721	.730	NW	NW	NW	12	35	60	35.7	N. 45 W.	7	8	9		
712	.655	.730	.699	W	W	SW	25	4	12	12.7	S. 77 W.	6	2	7		
698	.824	.820	.781	SW	S	S	35	45	35	37.7	S. 31 W.	10	10	10		.28
797	.800	.794	.797	NE	N	N	25	45	12	25.3	N. 13 E.	10	7	8		
800	.794	.800	.798	NE	NE	NE	4	35	45	28.0	N. 45 E.	10	8	10		
792	.719	.797	.769	E	W	W	2	4	12	4.7	West	10	7	10		.62
792	.800	.794	.795	W	W	W	2	12	2	5.3	West	6	10	10		.42
800	.807	.797	.801	SW	SW	W	12	25	45	25.7	S. 70 W.	5	3	4		
648	.457	.582	.562	NW	W	W	60	60	75	60.7	N. 77 W.	4	5	4		
596	.712	.682	.663	W	W	W	35	45	75	51.7	West	3	4	6		
541	.622	.730	.631	NE	W	W	12	2	4	3.0	N. 17 E.	8	2	5		
431	.730	.622	.594	NE	NE	NE	25	45	60	43.3	N. 45 E.	4	3	10		.48
703	.698	.622	.674	NE	N	N	4	45	60	36.0	N. 2 E.	10	2	8		
610	.800	.797	.736	N	W	W	2	2	4	2.3	N. 73 W.	6	2	4		
685	.698	.792	.725	NE	NW	SW	4	12	4	4.0	N. 45 W.	3	7	6		
775	.712	.782	.756	SW	SW	SW	25	35	12	24.0	S. 45 W.	5	4	6		
648	.556	.623	.609	W	W	W	60	45	75	60.0	West	5	3	4		
659	.622	.598	.626	W	W	W	45	25	4	24.7	West	5	2	3		
721	.703	.792	.739	W	W	W	2	4	2	2.7	West	5	2	4		
746	.698	.694	.713	SW	SW	W	4	12	25	12.7	S. 73 W.	4	8	10		.10
800	.792	.788	.793	S	W	W	12	35	45	27.0	S. 81 W.	8	6	7		
622	.792	.800	.738	S	W	W	25	12	25	15.0	S. 56 W.	3	2	4		
698	.732	.802	.744	S	S	SW	35	45	25	33.0	S. 10 W.	5	10	7		
.693	.714	.737	.714							17.2	N. 73 W.	2.8	1.6	3.1		1.90

698	.738	.807	.748	W	W	W	4	2	4	3.3	North	5	4	6		
800	.802	.800	.801	W	W	E	2	4	35	9.7	East	8	7	5		
797	.797	.797	.797	NE	NE	NE	25	35	25	28.3	N. 45 E.	2	4	6		
		.476	.476	SE	E	NE	2	12	4	5.3	N. 53 E.	7	2	4		
	.848	.836	.842	S	S	S	2	12	35	16.3	South	5	4	5		
811	.732	.797	.780	SW	W	SW	35	4	25	21.0	S. 48 W.	6	7	6		
694	.794	.800	.764	SW	W	W	4	4	2	3.0	S. 72 W.	4	5	4		
782	.802	.797	.794	NW	W	W	12	4	2	5.7	N. 60 W.	8	4	6		
782	.719	.797	.766	SW	SW	N	4	2	12	3.7	N. 22 W.	3	3	5		
698	.798	.705	.734	SW	S	SW	35	12	45	29.3	S. 39 W.	3	4	6		
750	.847	.762	.786	S	N	SW	45	35	4	4.3	S. 13 W.	8	4	7		
756	.843	.880	.826	S	S	S	12	60	35	35.7	South	4	3	8		.18
820	.756	.750	.775	NW	W	W	45	4	2	16.3	N. 40 W.	7	4	6		
712	.800	.797	.776	NE	NW	NE	4	25	35	15.3	N. 12 E.	3	6	10		
802	.756	.738	.765	W	NW	NE	12	4	12	4.0	N. 16 W.	6	4	7		
807	.738	.732	.759	NE	NE	NE	25	60	45	43.0	N. 45 E.	3	4	8		
847	.762	.820	.810	SW	NE	NW	4	45	35	25.3	N. 45 E.	3	5	7		
847	.856	.822	.842	SW	S	SW	2	35	4	13.0	S. 6 W.	4	3	5		
828	.874	.802	.835	SW	N	N	18	25	45	20.7	N. 8 W.	8	9	10		
762	.867	.880	.836	W	W	W	4	2	4	3.3	West	3	5	10		.38
825	.841	.833	.833	SW	SW	SW	25	90	25	46.7	S. 45 W.	7	5	6		
833	.805	.762	.800	W	W	W	2	25	12	13.0	West	3	2	5		
712	.636	.698	.682	NW	NE	NE	45	60	75	46.7	N. 27 E.	4	10	10		1.62
694	.719	.802	.738	NW	NW	NW	60	45	25	43.0	N. 45 W.	10	8	7		0.04
698	.840	.719	.752	NW	NW	NW	35	25	45	35.0	N. 45 W.	5	4	7		
698	.833	.829	.787	NW	NW	NW	60	25	12	32.3	N. 45 W.	5	3	6		
807	.782	.833	.801	W	W	W	2	2	2	2.0	West	4	3	5		
824	.843	.836	.834	W	W	W	2	12	4	6.0	West	5	6	8		
820	.856	.732	.803	NW	NW	W	35	45	35	36.0	N. 58 W.	4	6	7		
807	.767	.762	.779	W	NW	NW	25	4	35	19.3	N. 63 W.	3	4	6		
.775	.795	.780	.777							6.5	N. 46 W.	5.0	4.7	6.4		2.22

Reductions of the monthly meteorological register of the service

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.																		
Jan.	1	29.831	29.855	29.957	29.881	33	35	24	35	37	26	32.7	37	24	162	17	106	
	2	30.015	29.979	29.793	29.929	19	30	21	21	32	23	25.3	33	19	080	144	80	
	3	29.813	29.715	29.670	29.733	21	23	31	23	25	34	27.3	35	22	090	100	12	
	4	29.649	29.788	29.957	29.798	22	16	7	25	17	10	17.3	26	7	084	078	08	
	5	30.055	30.013	30.025	30.031	....	10	10	5	12	13	10.0	15	7	....	046	034	
	6	30.203	30.103	29.742	30.016	13	16	7	15	18	10	14.3	17	7	056	067	03	
	7	30.539	30.735	30.863	30.712	....	....	....	5	1	1	2.3	12	3	....	....	....	
	8	30.957	30.947	30.897	30.934	....	4	0	1	7	2	33.0	9	0	....	018	03	
	9	30.577	30.674	30.495	30.582	0	20	....	4	21	0	8.3	24	0	....	096	....	
	10	30.517	30.326	30.092	30.312	10	22	25	12	24	28	21.3	29	10	046	095	10	
	11	29.855	29.803	29.817	29.825	26	33	30	28	35	32	31.7	34	26	117	162	144	
	12	29.726	29.538	29.394	29.553	29	31	32	31	33	35	33.0	35	31	137	151	142	
	13	29.288	29.422	29.672	29.461	35	34	19	38	56	22	32.0	40	19	165	170	002	
	14	30.118	30.221	30.293	30.210	4	3	2	7	3	5	5.0	22	2	018	050	014	
	15	30.243	30.017	29.628	29.962	4	7	9	7	10	12	9.7	13	4	018	024	031	
	16	29.258	29.492	29.607	29.452	31	24	20	33	26	23	27.3	33	12	151	106	074	
	17	29.658	29.508	29.575	29.580	21	29	31	22	31	33	28.3	34	20	101	137	151	
	18	29.588	29.612	29.667	29.622	27	37	29	29	40	31	33.3	42	27	124	181	137	
	19	29.528	29.640	29.580	29.582	31	33	33	33	35	36	34.7	37	30	151	162	14	
	20	29.368	29.763	29.883	29.671	45	18	7	48	20	10	26.0	48	7	260	076	03	
	21	29.905	29.833	29.825	29.854	....	12	7	5	15	10	10.0	16	4	034	141	03	
	22	29.798	29.933	29.967	29.899	10	15	16	13	18	19	16.7	20	10	034	046	056	
	23	30.015	29.990	30.037	30.014	8	20	14	11	22	17	16.7	23	8	028	085	04	
	24	30.150	30.050	29.805	30.001	13	24	21	16	26	24	22.0	26	12	044	106	079	
	25	29.505	29.425	29.640	29.523	21	28	22	24	30	25	26.2	30	21	079	130	024	
	26	29.675	29.750	29.772	29.732	19	20	21	22	23	24	23.0	26	21	069	085	072	
	27	29.895	29.993	29.925	29.938	21	22	18	24	25	20	23.0	25	18	079	084	076	
	28	29.833	29.760	29.713	29.769	16	21	20	18	24	22	21.3	25	16	067	079	085	
	29	29.768	29.705	29.728	29.730	21	30	25	24	32	28	28.0	32	21	079	144	106	
	30	29.494	29.428	29.563	29.495	29	33	30	32	35	33	33.3	37	27	126	162	132	
	31	29.490	29.455	29.256	29.400	19	....	....	22	27	19	22.7	34	19	069	....	....	
Means....		29.881	29.886	29.866	29.877	....	....	....	22.4	23.9	20.2	33.1	....	....	091	107	080	
Feb.	1	29.211	29.365	29.382	29.319	22	19	17	25	21	20	22.0	25	17	084	080	030	
	2	29.358	29.395	29.428	29.394	17	21	18	19	23	20	20.7	24	17	071	090	076	
	3	29.500	29.508	29.590	29.533	13	16	12	15	18	15	16.0	22	12	056	067	041	
	4	29.595	29.683	29.947	29.742	6	11	10	9	14	13	12.0	18	6	023	037	034	
	5	30.259	30.241	30.035	30.178	4	13	11	6	15	13	11.3	15	4	030	056	049	
	6	30.055	30.348	30.301	30.235	16	14	9	18	16	11	15.0	19	9	067	059	043	
	7	30.093	30.023	29.935	30.017	7	25	27	10	28	30	22.7	30	7	026	100	113	
	8	29.843	29.750	29.723	29.772	25	30	23	27	32	26	28.3	32	23	112	144	089	
	9	29.757	29.700	29.510	29.656	21	28	24	23	31	27	27.0	33	21	090	119	025	
	10	29.490	29.568	29.562	29.540	34	40	34	37	43	37	39.0	43	27	157	208	157	
	11	29.570	29.585	29.690	29.615	32	30	22	35	33	25	31.0	36	22	142	132	054	
	12	29.927	29.950	29.845	29.907	25	24	27	28	27	30	28.3	30	24	100	095	113	
	13	29.857	29.913	29.835	29.868	25	29	28	28	31	30	29.7	32	24	100	137	136	
	14	29.422	29.338	29.292	29.351	26	34	27	29	37	30	32.0	38	26	106	157	113	
	15	29.571	29.763	29.975	29.770	1	8	5	4	10	8	7.3	31	3	012	040	021	
	16	30.245	30.278	30.137	30.220	....	4	3	....	6	7	18.0	9	5	....	030	016	
	17	30.122	30.075	29.935	30.044	12	30	29	15	33	31	26.3	34	5	041	132	137	
	18	29.897	29.823	29.518	29.746	24	32	31	27	35	34	32.0	35	24	095	142	139	
	19	29.330	29.305	29.400	29.345	30	34	28	33	36	31	33.3	36	28	132	170	119	
	20	29.560	29.637	29.907	29.701	22	27	20	25	30	23	26.0	33	20	084	113	074	
	21	30.103	30.070	29.963	30.045	8	34	33	11	36	35	27.3	35	8	028	170	162	
	22	29.875	29.850	29.906	29.877	42	50	43	45	53	46	38.0	52	35	228	321	238	
	23	29.875	29.687	29.455	29.672	38	49	45	40	51	47	46.0	52	37	203	321	273	
	24	29.310	29.405	29.688	29.468	45	31	29	48	34	31	37.7	51	29	260	139	137	
	25	29.913	30.098	30.235	30.082	13	14	9	15	16	12	14.3	33	9	056	059	031	
	26	30.381	30.413	30.221	30.338	6	16	15	8	18	17	14.3	19	6	034	067	063	
	27	30.027	30.130	30.129	30.095	18	31	26	20	34	28	27.3	35	16	076	139	117	
	28	30.155	30.065	29.923	30.048	22	31	30	26	33	32	30.3	35	22	107	151	144	
Means....		29.796	29.820	29.802	29.806	....	....	....	23.7	28.3	24.9	25.6	....	....	033	012	102	



the northern and northwestern lakes, at Fort Niagara, New York.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation. In U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity. in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.							
797	807	754	789	SW	W	W	25	35	60	38.0	S. 9 W.	10	10	10		
712	794	730	745	W	W	S	4	2	2	2.3	S. 73 W.	10	8	10		
730	746	712	729	W	W	W	2	4	4	3.3	West	10	10	10		
622	834	377	611	NW	NW	NW	60	45	60	55.0	N. 45 W.	10	10	10		
	610	438	524	W	W	SW	12	35	45	28.3	S. 68 W.	10	10	10		
648	682	377	509	W	SE	SE	4	12	35	14.7	S. 41 E.	10	8	10		
				N	N	NE	45	35	35	35.7	N. 13 E.	10	10	10		
	308	438	373	NE	N	N	25	12	4	12.7	N. 28 E.	10	10	10		
	855		855	SW	SW	SW	4	2	2	2.7	S. 45 W.	10	8	10		
610	738	655	668	S	SW	S	4	12	25	12.7	S. 13 W.	10	10	10		
768	797	794	786	SW	SW	S	25	4	4	10.7	S. 40 W.	10	8	10		
788	800	698	762	NE	SW	E	25	4	2	7.3	N. 48 E.	10	10	10		
719	802	584	702	W	W	NW	12	25	45	25.0	N. 65 W.	10	10	10		
308	1.000	253	520	W	W	NW	12	25	45	25.0	N. 65 W.	10	8	10		
308	377	418	368	SE	NE	NE	12	35	45	27.0	N. 54 E.	10	10	10		
800	754	598	717	W	S	SW	45	35	25	27.3	S. 50 W.	10	10	10		
860	788	800	816	SW	SW	SW	12	25	35	24.0	S. 45 W.	8	10	10		
775	732	788	765	SW	SW	SW	2	12	2	5.3	S. 45 W.	10	7	10		
800	797	705	767	SW	S	N	4	2	2	1.3	S. 45 W.	10	10	10		
777	702	377	619	S	SW	SW	45	60	35	43.6	S. 31 W.	10	8	10		
438	475	377	430	S	S	S	45	35	25	35.0	South	10	7	10		
438	457	541	479	SW	W	NW	12	25	12	14.0	West	10	6	10		
398	721	509	543	S	SW	SE	4	4	4	3.2	South	10	8	10		
492	754	610	619	SE	NE	NE	12	35	45	27.0	N. 54 E.	10	10	10		
610	782	622	671	NE	N	W	60	60	45	34.0	N. 1 W.	10	10	10		
584	721	610	638	N	NW	N	25	4	25	14.3	N. 3 W.	10	10	10		
610	622	702	645	N	S	S	35	4	12	6.3	North	10	10	10		
682	610	721	671	S	SW	SW	4	2	12	5.7	S. 35 W.	9	10	10		
610	794	655	686	SE	SW	SW	2	2	4	2.1	S. 27 W.	10	10	10		
694	797	703	731	SE	SE	W	2	4	45	13.7	S. 84 W.	10	10	10		
584			584	S	W	W	4	25	35	20.3	S. 86 W.	7	6	10		
630	712	591	646							8.0	N. 58 W.	9.8	9.1	10.0		
622	712	556	630	NW	NW	NW	60	45	35	46.3	N. 45 W.	10	8	10		
692	730	702	704	SW	SW	NW	25	35	45	25.0	S. 82 W.	10	7	10		
618	682	475	602	S	SW	W	35	25	35	24.7	S. 45 W.	10	10	10		
356	457	438	417	SW	SW	W	4	60	25	28.0	S. 57 W.	10	10	10		
520	648	623	597	W	SW	SW	4	35	60	32.7	S. 47 W.	10	10	10		
682	659	596	646	W	W	SW	60	35	12	34.7	S. 86 W.	10	10	10		
377	655	675	569	SW	S	S	2	25	4	10.0	S. 3 W.	7	8	10		
761	794	634	730	SW	NE	NE	2	4	35	12.3	N. 45 E.	10	10	10		.18
730	685	644	686	SW	S	NE	4	2	4	0.7	South	10	7	10		
712	750	712	725	SW	SW	SW	4	2	2	2.7	S. 45 W.	10	7	10		.48
698	703	622	674	NE	N	NW	12	25	35	20.3	N. 16 W.	10	10	10		.96
655	644	675	658	N	NE	NW	25	45	60	33.3	N. 6 W.	10	10	10		
655	788	782	742	N	W	W	12	25	4	10.7	N. 68 W.	10	10	10		
665	712	675	684	N	W	W	4	25	35	19.0	N. 88 W.	10	10	10		
223	582	334	380	W	W	NW	25	35	75	41.7	N. 65 W.	10	10	10		
	520	281	401	SW	S	SW	12	35	45	28.7	S. 25 W.	10	8	10		
475	703	788	655	SW	SW	SW	25	45	60	43.3	S. 45 W.	10	8	10		
644	698	712	685	SW	SW	SW	12	4	25	13.7	S. 45 W.	10	10	10		
703	802	685	730	SW	SW	NW	4	12	35	13.0	N. 70 W.	10	10	10		
622	675	598	632	SW	SW	SW	45	25	12	27.3	S. 45 W.	10	6	10		
398	802	797	666	SW	W	SW	12	12	35	18.7	S. 54 W.	10	7	10		.18
762	798	767	776	SW	SW	W	45	35	45	38.7	S. 61 W.	5	4	7		
820	859	847	842	SW	S	SW	4	4	35	14.0	S. 41 W.	5	3	10		.22
777	712	788	759	SW	NW	NW	12	35	60	32.0	N. 52 W.	10	6	7		
648	659	418	575	NW	NW	NW	75	60	45	60.0	N. 45 W.	10	4	6		
553	682	671	635	NW	NW	NE	12	25	35	16.7	N. 2 W.	8	6	7		.16
702	712	768	727	SE	SW	SW	4	2	4	2.7	S. 7 W.	10	5	6		
864	800	794	819	E	E	SE	4	25	12	12.7	S. 77 E.	7	6	7		
625	701	640	655							12.9	S. 85 W.	9.3	4.3	9.3		2.20



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to tempera- ture of 32° Fahr., expressed in United States inches and deci- mals.				TEMPERATURE—FAHRENHEIT.										VAPOR.		
					Wet bulb, or point of evaporation.			Dry bulb, or tem- perature of the open air.				Maximum.	Minimum.	Elasticity in inches and de- cimals.			
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.		
1866.					°	°	°	°	°	°	°	°	°				
March	1	29.895	29.963	29.828	29.895	30	38	37	33	40	39	37.3	48	30	.132	.903	.14. .1
	2	29.913	29.795	29.645	29.784	35	40	37	37	43	39	39.7	44	37	.178	.908	.14. .2
	3	29.763	29.710	29.728	29.734	38	....	25	41	....	27	34.3	46	25	.190	....	.112. .5
	4	29.715	29.770	29.815	29.767	24	19	21	26	22	24	24.0	37	19	.106	.069	.09. .6
	5	29.917	29.823	29.838	29.879	19	25	24	22	28	26	25.3	31	18	.069	.100	.106. .8
	6	29.998	29.950	29.855	29.934	19	28	27	21	30	29	26.7	32	19	.080	.130	.134. .1
	7	29.783	29.649	29.683	29.705	19	21	18	22	24	20	22.0	30	18	.069	.079	.076. .3
	8	29.813	29.955	29.910	29.893	19	24	25	22	26	28	25.3	31	17	.069	.106	.102. .8
	9	29.815	29.721	29.928	29.821	21	22	20	23	24	22	23.0	28	17	.090	.085	.085. .8
	10	30.085	30.003	29.860	29.983	19	25	21	21	28	23	24.0	30	19	.080	.100	.090. .4
	11	29.523	29.296	29.498	29.439	32	39	38	35	41	40	38.7	42	20	.142	.212	.20. .2
	12	29.685	29.810	30.073	29.856	33	31	30	35	33	32	33.3	40	30	.162	.151	.144. .12
	13	29.947	30.085	30.163	30.065	31	30	31	33	32	33	32.7	35	30	.151	.144	.151. .16
	14	29.938	29.913	29.791	29.881	32	35	33	34	38	35	35.7	38	31	.155	.165	.162. .17
	15	29.825	29.923	29.490	29.746	32	31	30	34	33	32	33.0	35	30	.155	.151	.144. .15
	16	29.802	29.448	29.403	29.551	31	35	33	33	37	35	35.0	37	31	.151	.179	.162. .14
	17	29.573	29.738	29.803	29.705	13	11	8	15	14	10	13.0	30	8	.056	.037	.040. .14
	18	29.851	29.549	29.613	29.671	9	19	16	11	21	18	16.7	24	9	.043	.080	.087. .16
	19	29.800	29.855	29.803	29.819	16	22	21	19	25	23	22.3	26	16	.056	.084	.090. .17
	20	29.837	29.753	29.430	29.690	17	21	22	21	23	25	23.0	27	20	.049	.090	.084. .13
	21	29.198	29.493	29.725	29.472	30	32	22	33	35	25	31.0	35	32	.132	.142	.024. .13
	22	30.010	30.030	29.897	29.979	21	31	33	24	33	35	30.7	36	20	.079	.151	.162. .11
	23	29.695	29.605	29.620	29.640	28	32	32	31	35	34	33.3	35	27	.119	.142	.153. .12
	24	29.702	29.583	29.538	29.608	27	31	28	29	34	30	31.0	36	26	.124	.139	.130. .17
	25	29.550	29.570	29.575	29.565	13	17	11	15	20	13	16.0	22	11	.056	.060	.049. .55
	26	29.925	29.895	29.900	29.907	14	22	20	16	25	23	21.3	27	14	.059	.084	.074. .62
	27	30.200	30.168	30.103	30.157	20	30	32	22	33	34	29.7	35	20	.025	.132	.153. .13
	28	30.095	29.810	29.523	29.809	23	32	29	25	35	32	30.7	35	23	.100	.142	.136. .12
	29	29.492	29.573	29.658	29.574	31	32	29	33	34	31	32.7	35	28	.151	.155	.137. .16
	30	29.765	29.725	29.585	29.692	22	32	31	25	34	33	30.7	35	22	.084	.155	.153. .17
	31	29.405	29.198	29.465	29.356	32	37	34	35	40	36	37.0	42	31	.142	.181	.170. .16
Means...		29.792	29.755	29.734	29.793	....	....	....	26.6	30.8	28.6	28.7	....	....	.017	.130	.123. .62
April	1	29.895	29.993	29.925	29.871	32	38	35	35	41	37	37.3	43	32	.142	.190	.173. .12
	2	29.948	29.925	29.933	29.935	31	34	31	33	36	33	34.0	41	30	.151	.176	.151. .15
	3	29.958	29.993	29.830	29.927	33	35	33	35	37	35	35.7	38	31	.162	.162	.162. .16
	4	29.748	29.741	29.650	29.713	....	....	34	....	....	40	39.3	43	34	....	....	.112. .11
	5	29.578	29.640	29.655	29.624	....	67	62	....	70	65	55.0	71	36	....	622	.516. .58
	6	29.903	29.925	29.955	29.928	36	37	33	38	40	35	37.7	47	33	.186	.181	.162. .17
	7	30.035	29.990	29.987	30.004	29	33	31	32	35	33	33.3	37	29	.126	.162	.151. .16
	8	29.923	29.960	29.933	29.939	28	34	33	30	36	35	33.7	38	28	.130	.170	.162. .15
	9	30.048	29.963	30.023	30.011	28	35	33	30	38	35	34.3	40	27	.130	.165	.162. .13
	10	29.915	29.928	29.883	29.909	32	50	33	35	53	36	41.3	53	30	.142	.321	.168. .30
	11	29.870	29.755	29.743	29.789	40	45	42	43	47	45	45.0	51	40	.202	.273	.228. .26
	12	29.738	29.638	29.400	29.592	41	65	58	44	68	60	57.3	70	41	.218	.577	.456. .47
	13	29.888	29.933	29.960	29.927	38	41	40	40	44	43	42.3	55	37	.203	.218	.203. .20
	14	29.801	29.778	29.658	29.746	34	38	33	37	40	35	37.3	45	33	.157	.203	.162. .17
	15	29.855	29.948	29.995	29.933	34	41	38	36	44	41	40.3	45	34	.170	.218	.190. .18
	16	29.923	29.910	29.938	29.924	35	38	37	37	41	40	39.3	42	34	.178	.190	.181. .16
	17	29.995	30.068	29.873	29.979	45	42	38	47	45	40	44.0	48	37	.273	.222	.203. .25
	18	30.035	29.933	29.978	29.982	45	71	57	47	74	60	60.3	74	42	.273	.718	.456. .72
	19	29.849	29.863	29.805	29.839	59	55	51	62	57	54	57.7	66	50	.460	.407	.335. .40
	20	29.813	29.550	29.503	29.622	42	52	58	45	54	60	53.0	64	42	.222	.362	.456. .39
	21	29.455	29.558	29.351	29.455	58	64	61	61	67	64	64.0	67	57	.443	.556	.497. .49
	22	29.308	29.301	29.428	29.346	41	52	42	43	55	45	47.7	58	40	.231	.349	.228. .29
	23	29.311	29.378	28.980	29.223	34	35	32	37	39	35	43.7	45	32	.157	.132	.142. .13
	24	29.142	29.052	29.228	29.141	29	35	34	32	38	36	35.3	41	29	.126	.162	.178. .15
	25	29.258	29.445	29.431	29.378	32	43	35	35	45	38	39.3	45	32	.142	.251	.163. .16
	26	29.561	29.688	29.643	29.631	32	41	40	35	43	42	40.0	45	32	.142	.231	.221. .18
	27	29.899	29.808	29.741	29.816	35	42	41	37	45	43	41.7	47	33	.178	.222	.211. .21
	28	29.591	29.411	29.508	29.503	39	44	42	41	46	44	43.7	47	38	.212	.262	.241. .26
	29	29.758	29.881	29.689	29.776	38	48	37	40	50	40	43.3	52	37	.203	.309	.181. .21
	30	29.773	29.878	29.658	29.770	35	43	42	37	46	45	42.7	50	34	.178	.208	.228. .23
Means....		29.752	29.761	29.709	29.741	....	....	....	39.0	47.2	43.1	43.3	....	....	.198	.229	.235. .24

rthern and northwestern lakes, at Fort Niagara, New York.

VAPOR.			WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimls.	Am't of rain or melted snow, in U. S. inches and decimls.
Humidity. uration = 1,000.			Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.							
.820	.816	.780	SE	NW	NW	2	4	2	1.3	N. 45 W.	6	5	8		
.750	.816	.791	W	NE	SW	4	25	2	7.0	N. 37 E.	8	6	7		
	.761	.749	SW	W	NW	4	35	45	25.0	N. 67 W.	6	4	5		
.584	.610	.649	NW	NW	NW	35	60	75	56.7	N. 45 W.	6	7	5		
.655	.754	.664	NW	W	W	35	60	45	44.0	N. 79 W.	3	2	4		
.782	.775	.756	W	W	W	60	45	35	46.7	West	4	3	7		
.610	.702	.632	NW	W	NW	12	60	45	36.0	N. 68 W.	4	2	6		
.754	.655	.664	NW	W	NW	35	45	60	43.7	N. 59 W.	7	5	8		
.738	.721	.730	NW	NW	NW	12	35	60	35.7	N. 45 W.	7	8	9		
.655	.730	.699	W	W	SW	25	4	12	12.7	S. 77 W.	6	2	7		
.824	.820	.781	SW	S	S	35	45	35	37.7	S. 31 W.	10	10	10		.28
.800	.794	.797	NE	N	N	25	45	12	25.3	N. 13 E.	10	7	8		
.794	.800	.798	NE	NE	NE	4	35	45	28.0	N. 45 E.	10	8	10		
.719	.797	.769	E	W	W	2	4	12	4.7	West	10	7	10		.62
.800	.794	.795	W	W	W	2	12	2	5.3	West	6	10	10		.42
.807	.797	.801	SW	SW	W	12	25	45	25.7	S. 70 W.	5	3	4		
.457	.582	.562	NW	W	W	60	60	75	60.7	N. 77 W.	4	5	4		
.712	.682	.663	W	W	W	35	45	75	51.7	West	3	4	6		
.622	.730	.631	NE	W	W	12	2	4	3.0	N. 17 E.	8	2	5		
.730	.622	.594	NE	NE	NE	25	45	60	43.3	N. 45 E.	4	3	10		.48
.698	.622	.674	NE	N	N	4	45	60	36.0	N. 2 E.	10	2	8		
.800	.797	.736	N	W	W	2	2	4	2.3	N. 73 W.	6	2	4		
.698	.792	.725	NE	NW	SW	4	12	4	4.0	N. 45 W.	3	7	6		
.712	.782	.756	SW	SW	SW	25	35	12	24.0	S. 45 W.	5	4	6		
.556	.623	.609	W	W	W	60	45	75	60.0	West	5	3	4		
.622	.598	.626	W	W	W	45	25	4	24.7	West	5	2	3		
.703	.792	.739	W	W	W	2	4	2	2.7	West	5	2	4		
.698	.694	.713	SW	SW	W	4	12	25	12.7	S. 73 W.	4	8	10		.10
.792	.788	.793	S	W	W	12	35	45	27.0	S. 81 W.	8	6	7		
.792	.800	.738	S	W	W	25	12	25	15.0	S. 56 W.	3	2	4		
.732	.802	.744	S	S	SW	35	45	25	33.0	S. 10 W.	5	10	7		
.714	.737	.714							17.2	N. 73 W.	2.8	1.6	3.1		1.90
.738	.807	.748	W	W	W	4	2	4	3.3	North	5	4	6		
.802	.800	.801	W	W	E	2	4	35	9.7	East	8	7	5		
.797	.797	.797	NE	NE	NE	25	35	25	28.3	N. 45 E.	2	4	6		
	.476	.476	SE	E	NE	2	12	4	5.3	N. 53 E.	7	2	4		
.848	.836	.842	S	S	S	2	12	35	16.3	South	5	4	5		
.732	.797	.780	SW	W	SW	35	4	25	21.0	S. 48 W.	6	7	6		
.794	.800	.764	SW	W	W	4	4	2	3.0	S. 72 W.	4	5	4		
.802	.797	.794	NW	W	W	12	4	2	5.7	N. 60 W.	8	4	6		
.719	.797	.766	SW	SW	N	4	2	12	3.7	N. 22 W.	3	3	5		
.798	.705	.734	SW	S	SW	35	12	45	29.3	S. 39 W.	3	4	6		
.847	.762	.786	S	N	SW	45	35	4	4.3	S. 13 W.	8	4	7		
.843	.880	.826	S	S	S	12	60	35	35.7	South	4	3	8		.18
.756	.750	.775	NW	W	W	45	4	2	16.3	N. 40 W.	7	4	6		
.800	.797	.776	NE	NW	NE	4	25	35	15.3	N. 12 E.	3	6	10		
.756	.738	.765	W	NW	NE	12	4	12	4.0	N. 16 W.	6	4	7		
.738	.732	.759	NE	NE	NE	25	60	45	43.0	N. 45 E.	3	4	8		
.762	.820	.810	SW	NE	NW	4	45	35	25.3	N. 45 E.	3	5	7		
.856	.822	.842	SW	S	SW	2	35	4	13.0	S. 6 W.	4	3	5		
.874	.802	.835	SW	N	N	12	25	45	20.7	N. 8 W.	8	9	10		
.867	.880	.836	W	W	W	4	2	4	3.3	West	3	5	10		.38
.841	.833	.833	SW	SW	SW	25	90	25	46.7	S. 45 W.	7	5	6		
.805	.762	.800	W	W	W	2	25	12	13.0	West	3	2	5		
.636	.698	.682	NW	NE	NE	45	60	75	46.7	N. 27 E.	4	10	10		1.62
.719	.802	.738	NW	NW	NW	60	45	25	43.0	N. 45 W.	10	8	7		0.04
.840	.719	.752	NW	NW	NW	35	25	45	35.0	N. 45 W.	5	4	7		
.833	.829	.787	NW	NW	NW	60	25	12	32.3	N. 45 W.	5	3	6		
.762	.833	.801	W	W	W	2	2	2	2.0	West	4	3	5		
.843	.836	.834	W	W	W	2	12	4	6.0	West	5	6	8		
.856	.732	.803	NW	NW	W	35	45	35	36.0	N. 58 W.	4	6	7		
.767	.762	.779	W	NW	NW	25	4	35	19.3	N. 63 W.	3	4	6		
5	.795	.780	.777						6.5	N. 46 W.	5.0	4.7	6.4		2.22

Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.								VAPOR.					
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
					7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					°	°	°	°	°	°	°	°	°					
May	1	29.558	29.366	29.373	29.432	35	36	32	38	39	35	35.7	44	32	.165	.173	.142	14
	2	29.488	29.533	29.656	29.559	33	38	32	36	40	34	36.7	40	32	.149	.203	.155	15
	3	29.611	29.518	29.621	29.583	35	45	42	37	47	45	43.0	47	35	.178	.273	.228	16
	4	29.796	29.621	29.503	29.640	39	52	48	41	51	50	47.3	54	38	.212	.308	.236	17
	5	29.526	29.623	29.686	29.612	39	49	47	40	52	50	47.3	53	39	.225	.308	.223	18
	6	29.651	29.766	29.806	29.741	38	54	57	41	56	60	52.3	60	38	.190	.321	.426	19
	7	29.909	29.866	29.779	29.851	40	46	48	41	47	50	46.0	55	37	.235	.297	.329	20
	8	29.771	29.526	29.348	29.548	41	45	40	43	47	42	44.0	52	35	.231	.273	.221	21
	9	29.316	29.451	29.613	29.460	41	54	51	43	57	54	51.3	57	40	.249	.378	.335	22
	10	29.689	29.688	29.586	29.654	42	47	44	45	50	48	47.7	58	41	.228	.283	.236	23
	11	29.544	29.551	29.606	29.567	45	55	57	48	58	60	55.3	60	45	.260	.333	.426	24
	12	29.597	29.629	29.606	29.611	49	70	63	50	72	66	62.7	73	48	.335	.706	.536	25
	13	29.478	29.541	29.727	29.582	42	42	38	45	44	40	43.0	60	38	.228	.241	.220	26
	14	29.787	29.833	29.753	29.791	36	47	45	38	50	47	45.0	52	36	.186	.283	.273	27
	15	29.677	29.434	29.422	29.511	40	56	52	43	58	55	52.0	59	39	.208	.422	.442	28
	16	29.446	29.622	29.659	29.576	42	45	43	45	47	45	45.7	55	41	.228	.273	.251	29
	17	29.734	29.777	29.607	29.706	39	43	38	40	46	41	42.3	50	38	.225	.238	.190	30
	18	29.532	29.544	29.477	29.518	42	49	52	45	51	54	50.0	55	41	.228	.321	.362	31
	19	29.697	29.727	29.572	29.665	45	53	52	48	60	54	54.0	64	44	.260	.456	.372	32
	20	29.527	29.514	29.462	29.501	53	77	52	55	80	55	63.3	80	49	.376	.827	.346	33
	21	29.492	29.544	29.584	29.540	50	44	43	51	46	45	47.3	57	43	.348	.262	.251	34
	22	29.716	29.769	29.833	29.773	39	43	38	42	45	40	42.3	46	38	.199	.243	.233	35
	23	29.780	29.752	29.773	29.768	40	47	42	43	50	45	46.0	52	40	.208	.283	.227	36
	24	29.827	29.790	29.672	29.763	38	58	53	40	60	55	51.7	60	36	.203	.456	.251	37
	25	29.569	29.469	29.444	29.494	48	53	54	50	55	56	53.7	61	48	.309	.376	.221	38
	26	29.449	29.472	29.504	29.475	44	47	50	46	50	53	42.0	57	42	.262	.283	.221	39
	27	29.276	29.102	29.043	29.140	45	49	46	40	51	49	46.7	56	46	.221	.321	.221	40
	28	29.076	29.192	29.349	29.206	40	45	46	42	47	45	44.7	50	40	.221	.273	.221	41
	29	29.372	29.434	29.522	29.443	42	45	48	45	47	50	47.3	51	52	.228	.273	.309	42
	30	29.489	29.416	29.372	29.426	42	52	55	45	55	57	52.3	57	42	.228	.349	.407	43
	31	29.654	29.797	29.790	29.747	44	50	52	46	53	55	51.3	58	43	.262	.321	.349	44
Means....		29.582	29.576	29.573	29.577	.....	.....	.....	43.6	51.9	49.4	48.3	.....	.....	.235	.340	.297	22
June	1	29.887	29.845	29.782	29.833	43	50	48	45	53	50	49.3	56	42	.251	.321	.309	23
	2	29.715	29.749	29.679	29.714	45	53	48	48	56	50	51.3	57	44	.260	.363	.309	24
	3	29.579	29.466	29.472	29.506	48	53	48	51	55	50	55.3	58	47	.296	.376	.302	25
	4	29.484	29.466	29.441	29.464	54	55	54	56	57	56	56.3	59	46	.391	.407	.391	26
	5	29.509	29.481	29.462	29.484	47	53	50	50	56	52	52.7	60	46	.283	.363	.334	27
	6	29.504	29.446	29.462	29.471	56	62	58	59	65	60	61.3	66	53	.409	.516	.456	28
	7	29.437	29.534	29.569	29.540	56	60	58	58	63	60	60.3	64	55	.422	.478	.456	29
	8	29.639	29.704	29.689	29.677	57	61	58	61	64	66	61.7	65	55	.412	.497	.456	30
	9	29.624	29.661	29.514	29.600	51	59	54	53	62	57	57.3	63	50	.348	.460	.372	31
	10	29.856	29.927	29.890	29.891	60	67	62	62	70	65	65.7	72	59	.491	.622	.516	32
	11	30.025	30.057	29.935	30.006	52	60	58	54	63	60	59.0	71	51	.362	.478	.456	33
	12	29.953	29.867	29.752	29.857	55	56	49	57	58	50	55.0	65	49	.407	.422	.335	34
	13	29.579	29.586	29.474	29.546	52	60	58	55	62	60	59.0	70	50	.349	.491	.456	35
	14	29.509	29.581	29.518	29.536	67	68	65	69	70	67	68.7	70	65	.635	.658	.591	36
	15	29.461	29.548	29.598	29.536	60	65	60	63	67	62	64.0	69	59	.478	.521	.491	37
	16	29.535	29.508	29.476	29.506	58	67	62	61	70	65	65.3	70	51	.443	.622	.516	38
	17	29.623	29.575	29.351	29.516	58	57	52	60	61	55	58.7	66	57	.456	.412	.349	39
	18	29.198	29.145	29.296	29.213	55	58	52	57	60	55	57.3	62	52	.407	.456	.349	40
	19	29.323	29.521	29.708	29.517	47	58	52	50	60	55	55.0	60	47	.283	.456	.349	41
	20	29.771	29.773	29.708	29.751	55	70	65	58	72	68	66.0	72	52	.393	.706	.577	42
	21	29.748	29.608	29.595	29.650	64	78	72	67	80	75	74.0	81	62	.556	.931	.744	43
	22	29.560	29.695	29.613	29.623	65	72	67	66	74	70	70.0	75	65	.604	.757	.622	44
	23	29.708	29.770	29.640	29.706	63	73	68	65	80	70	71.7	80	62	.549	.931	.658	45
	24	29.863	29.718	29.773	29.785	68	73	68	71	76	70	72.3	78	68	.644	.771	.658	46
	25	29.801	29.858	29.733	29.797	73	85	68	76	88	71	73.3	90	66	.771	.162	.644	47
	26	29.731	29.806	29.670	29.736	67	80	72	70	83	75	76.0	84	65	.622	.982	.744	48
	27	29.543	29.600	29.615	29.586	65	68	62	68	70	65	67.7	80	62	.577	.658	.516	49
	28	25.653	29.805	29.771	29.743	53	59	52	56	61	55	57.3	67	52	.363	.473	.349	50
	29	29.973	29.971	29.863	29.936	52	60	52	54	62	55	59.7	63	50	.362	.491	.349	51
	30	29.931	29.968	29.826	29.908	57	61	58	60	63	61	61.3	65	55	.426	.510	.443	52
Means....		29.660																

northern and northwestern lakes, at Fort Niagara, New York.

VAPOR.			WIND.									Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. saturation = 1,000.			Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.						
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.								
.726	.698	.714	NE.....	NE.....	NE.....	45	60	75	60.0	N. 45 E.	8	10	10	.....	.20	
.820	.792	.772	NW....	N.....	W.....	45	60	45	39.7	N. 40 W.	7	4	7	.....	.....	
.847	.762	.805	W.....	W.....	W.....	35	45	25	35.0	West...	6	9	6	.....	.....	
.....	.856	.840	W.....	W.....	W.....	45	4	2	17.0	West...	5	7	6	.....	.....	
.794	.786	.830	W.....	W.....	W.....	2	25	4	3.3	West...	6	4	7	.....	.....	
.872	.822	.811	W.....	W.....	W.....	12	25	2	13.0	West...	6	3	4	.....	.....	
.923	.856	.897	NW....	NE.....	NE.....	4	25	4	97.	N. 37 E.	6	5	6	.....	.....	
.847	.829	.836	SW....	NE.....	NE.....	2	12	35	15.0	N. 45 E.	4	7	10	.....	.70	
.812	.802	.765	W.....	SW....	SW....	25	12	35	22.3	S. 60 W.	7	5	6	.....	.....	
.786	.704	.751	S.....	NE.....	SW....	2	35	25	3.0	N. 56 E.	4	7	6	.....	.....	
.816	.822	.805	SW....	N.....	NE.....	2	12	12	7.0	N. 20 E.	2	4	5	.....	.....	
.900	.838	.888	S.....	S.....	S.....	2	35	45	27.3	South...	6	4	7	.....	.....	
.836	.820	.806	N.....	W.....	NW....	45	35	60	38.7	N. 41 W.	10	10	6	.....	.88	
.786	.847	.815	W.....	W.....	W.....	25	4	12	13.7	West...	7	4	6	.....	.....	
.876	.805	.810	SW....	SW....	SW....	25	12	4	13.7	S. 45 W.	5	6	10	.....	.22	
.847	.840	.816	NW....	NW....	NW....	35	4	2	13.3	N. 45 W.	10	8	6	.....	.....	
.767	.738	.822	W.....	W.....	NE.....	2	12	35	9.0	N. 23 E.	4	5	7	.....	.....	
.859	.867	.826	W.....	NE.....	NE.....	4	25	4	8.7	N. 39 E.	8	6	5	.....	.....	
.880	.867	.821	W.....	NW....	NW....	12	2	2	5.0	N. 79 W.	3	5	6	.....	.....	
.867	.805	.847	NW....	SW....	NW....	4	45	60	26.3	N. 80 W.	2	10	6	.....	.....	
.843	.840	.671	W.....	W.....	NW....	25	60	45	40.3	N. 75 W.	6	8	9	.....	.....	
.820	.820	.795	NW....	NW....	NW....	75	45	60	60.0	N. 45 W.	6	5	7	.....	.....	
.786	.762	.766	NW....	NW....	NW....	45	12	25	27.3	N. 45 W.	5	7	6	.....	.....	
.880	.840	.847	SW....	S.....	SW....	4	45	35	26.0	S. 21 W.	5	4	7	.....	.....	
.869	.872	.866	SW....	SW....	S.....	25	4	2	10.0	S. 42 W.	10	7	4	.....	.....	
.786	.798	.809	W.....	NE.....	NE.....	2	35	25	16.3	N. 45 E.	7	6	10	.....	.....	
.859	.781	.820	E.....	NE.....	NE.....	60	45	75	60.0	N. 45 E.	10	10	10	.....	1.12	
.847	.....	.838	NW....	W.....	W.....	60	25	35	37.0	N. 67 W.	10	8	9	.....	.....	
.847	.856	.822	W.....	W.....	SW....	2	2	4	2.3	S. 66 W.	8	10	6	.....	.....	
.805	.874	.814	SW....	SW....	SW....	2	35	25	20.7	S. 45 W.	8	10	10	.....	.14	
.798	.805	.815	W.....	W.....	W.....	4	12	25	13.7	West...	7	5	6	.....	.....	
.833	.814	.811	.....	.....	.....	.....	.....	.....	10.6	N. 51 W.	6.4	6.6	6.9	.....	3.06	
.798	.856	.831	NW....	N.....	N.....	4	4	12	6.3	N. 8 W.	4	5	6	.....	.....	
.809	.856	.814	W.....	NW....	NW....	2	12	4	6.0	N. 49 W.	7	5	4	.....	.....	
.869	.856	.838	N.....	N.....	NE.....	4	35	45	25.7	N. 24 E.	6	8	7	.....	.....	
.874	.872	.873	NE.....	NW....	NW....	25	35	12	17.7	N. 17 W.	8	10	6	.....	.12	
.809	.861	.819	W.....	W.....	W.....	25	4	2	10.2	West...	10	8	7	.....	.22	
.836	.826	.845	S.....	SW....	SW....	12	45	60	4.7	S. 41 W.	10	6	10	.....	.....	
.831	.880	.862	NW....	W.....	W.....	45	60	45	46.7	N. 77 W.	7	5	6	.....	.....	
.833	.880	.827	W.....	NE.....	W.....	12	35	4	8.7	N. 19 E.	5	6	7	.....	.....	
.824	.812	.835	W.....	NW....	NW....	4	12	25	13.3	N. 49 W.	7	6	7	.....	.....	
.848	.836	.856	W.....	W.....	W.....	2	25	2	9.7	West...	6	3	4	.....	.....	
.831	.880	.859	NW....	NW....	NW....	12	25	4	13.7	N. 45 W.	5	7	6	.....	.46	
.876	.927	.892	NE.....	N.....	NE.....	45	25	35	33.0	N. 35 E.	4	10	10	.....	.30	
.844	.880	.856	W.....	NW....	S.....	2	4	25	7.7	S. 11 W.	8	7	10	.....	.....	
.898	.893	.896	SW....	SW....	S.....	25	35	25	26.7	S. 32 W.	8	9	7	.....	.....	
.893	.884	.869	SW....	W.....	W.....	35	45	4	25.7	S. 72 W.	3	6	5	.....	.....	
.848	.836	.836	W.....	SW....	SW....	25	35	25	26.7	S. 58 W.	7	6	5	.....	.49	
.769	.805	.818	SW....	NE.....	NE.....	2	35	45	24.3	N. 45 E.	8	7	10	.....	.04	
.880	.805	.856	S.....	S.....	S.....	35	60	75	56.7	South...	10	9	10	.....	.....	
.880	.865	.824	W.....	W.....	W.....	25	35	12	24.0	West...	10	10	8	.....	.....	
.900	.843	.853	SW....	S.....	S.....	4	35	45	27.7	S. 2 W.	4	6	7	.....	.12	
.910	.858	.870	SW....	S.....	S.....	35	60	45	43.7	S. 11 W.	4	6	8	.....	.....	
.903	.848	.932	W.....	NW....	NW....	4	2	12	5.3	N. 55 W.	7	4	8	.....	.....	
.610	.898	.899	S.....	SW....	SW....	4	2	2	2.3	S. 24 W.	6	7	5	.....	.....	
.860	.898	.869	S.....	SW....	SW....	2	12	4	6.0	S. 40 W.	3	5	8	.....	.04	
.878	.850	.863	W.....	S.....	SW....	35	45	60	32.7	S. 41 W.	6	8	10	.....	.....	
.871	.858	.859	S.....	S.....	S.....	12	35	45	30.7	South...	8	6	7	.....	.26	
.898	.836	.859	W.....	SW....	SW....	4	4	25	11.0	S. 50 W.	10	7	8	.....	.....	
.882	.805	.832	N.....	W.....	W.....	45	2	45	21.7	N. 47 W.	7	4	10	.....	.....	
.884	.805	.852	W.....	W.....	W.....	2	4	12	6.0	West...	2	6	5	.....	.....	
.886	.825	.844	W.....	NW....	NW....	2	12	2	5.0	N. 49 W.	5	4	6	.....	.....	
.862	.854	.853	.....	.....	.....	.....	.....	.....	8.9	S. 61 W.	6.6	6.6	7.2	.....	2.05	



*Reductions of the monthly meteorological register of the survey.*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOUR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
July 1	29.665	29.617	29.508	29.597	67	73	71	72	78	75	75.0	81	60	595	744	724	687	
2	29.486	29.523	29.618	29.562	65	65	64	68	69	67	68.0	76	52	577	564	552	564	
3	29.723	29.697	29.665	29.695	65	72	60	69	82	72	74.3	82	50	564	650	576	623	
4	29.668	.....	29.716	29.692	68	.....	65	71	.....	68	69.5	82	59	644	.....	571	607	
5	29.884	29.865	29.821	29.857	58	64	61	65	71	66	67.3	77	52	329	503	477	459	
6	29.899	29.795	29.587	29.760	57	63	78	63	73	83	73.0	88	48	366	442	326	511	
7	29.740	29.742	29.686	29.723	72	70	64	78	80	68	75.3	82	58	704	524	540	622	
8	29.784	29.710	29.628	29.707	60	66	67	65	75	71	70.3	81	51	451	492	628	557	
9	29.754	29.831	29.804	29.796	60	64	62	65	70	65	66.7	74	51	451	516	516	474	
10	29.681	29.808	29.624	29.771	60	62	62	66	73	67	68.7	75	45	438	409	492	466	
11	29.646	29.615	29.561	29.607	59	67	63	64	75	70	69.7	81	52	433	554	429	490	
12	29.591	29.567	29.511	29.556	61	72	65	66	78	70	71.3	84	50	443	704	551	561	
13	29.695	29.729	29.732	29.719	48	53	53	53	63	58	58.0	70	42	269	270	336	284	
14	29.803	29.821	29.757	29.794	50	54	57	54	65	60	59.7	68	41	308	272	426	328	
15	29.807	29.784	29.744	29.778	52	56	57	56	64	61	60.3	66	39	335	343	412	363	
16	29.680	29.513	29.552	29.582	55	57	60	59	60	62	60.3	62	48	320	426	491	412	
17	29.594	.....	29.578	29.586	57	.....	64	61	.....	67	64.0	73	49	412	.....	556	471	
18	29.552	29.530	29.508	29.530	56	61	67	62	78	71	70.3	78	47	369	443	604	471	
19	29.566	29.436	29.356	29.453	58	64	60	64	68	64	65.3	76	50	403	543	425	490	
20	29.556	29.648	29.643	29.616	60	67	70	64	75	73	70.7	83	51	465	554	629	547	
21	29.761	29.835	29.771	29.790	60	62	61	65	70	66	67.0	72	54	451	449	470	457	
22	29.844	29.878	29.851	29.858	59	66	64	65	76	66	69.0	78	54	420	505	568	494	
23	29.846	29.795	29.765	29.802	61	70	69	64	75	72	70.3	80	48	497	666	628	627	
24	29.866	29.787	29.743	29.799	58	71	65	64	80	69	71.0	80	50	403	637	564	567	
25	29.645	29.421	29.400	29.489	67	70	70	74	84	74	77.3	85	57	562	922	672	725	
26	29.516	29.550	29.575	29.547	62	67	67	68	78	72	72.7	79	57	476	514	526	505	
27	29.661	29.664	29.543	29.623	65	68	68	70	77	73	73.3	83	57	550	564	612	572	
28	29.613	.....	29.535	29.574	69	.....	73	73	.....	76	74.5	83	61	655	.....	771	711	
29	29.746	29.740	29.748	29.745	60	63	62	64	73	67	68.0	76	58	465	442	422	443	
30	29.954	29.978	29.982	29.971	59	63	56	61	67	58	62.0	68	47	473	522	422	472	
31	30.128	30.120	30.006	30.081	49	62	66	52	72	68	64.0	76	38	302	422	612	447	
Means....	29.724	29.716	29.662	29.699	.....	.....	.....	64.2	73.2	62.3	68.6	.....	.....	461	524	554	512	
August 1	30.062	29.997	29.990	30.016	58	73	75	62	82	78	74.0	86	47	429	690	627	648	
2	30.012	29.928	29.914	29.948	67	79	76	72	89	80	80.3	90	58	595	855	840	844	
3	29.952	29.942	29.827	29.907	74	82	76	81	95	83	86.3	96	64	745	915	822	827	
4	29.900	29.844	29.820	29.855	68	74	70	74	80	74	76.0	82	62	614	752	673	692	
5	29.873	29.839	29.835	29.849	65	72	70	69	81	72	74.0	82	57	564	662	736	681	
6	29.610	29.579	29.350	29.513	70	77	70	74	82	74	76.7	83	53	679	860	679	724	
7	29.474	29.558	29.683	29.572	60	67	63	65	75	69	69.7	75	54	451	554	425	523	
8	29.719	29.730	29.783	29.744	58	66	63	63	77	69	69.7	78	47	416	492	435	444	
9	29.826	29.772	29.678	29.759	64	70	69	68	76	71	71.7	79	48	543	652	622	608	
10	29.501	29.382	29.473	29.452	67	74	66	70	79	69	72.7	80	56	622	772	568	684	
11	29.572	29.623	29.676	29.624	59	63	60	62	68	64	64.7	69	51	460	509	465	475	
12	29.777	29.788	29.724	29.763	54	55	59	60	65	61	62.0	71	50	338	320	473	374	
13	29.837	29.823	29.776	29.812	56	66	64	60	73	68	67.0	76	39	396	545	543	466	
14	29.839	29.752	29.731	29.774	58	72	66	63	76	70	69.7	82	44	416	731	526	574	
15	29.701	29.654	.....	29.678	63	76	.....	66	83	.....	72.5	.....	.....	536	802	.....	689	
16	29.728	29.775	29.766	29.756	62	63	65	67	70	68	68.3	86	46	489	482	577	516	
17	29.867	29.832	29.812	29.837	55	65	58	60	76	62	66.0	76	48	367	470	429	429	
18	29.857	29.802	29.783	29.814	57	68	67	60	78	69	69.0	80	41	426	550	625	531	
19	29.756	29.722	29.708	29.729	61	69	67	64	79	71	71.3	81	46	497	574	608	563	
20	29.681	29.619	29.560	29.620	65	69	72	70	85	78	77.7	86	50	550	584	704	626	
21	29.513	29.475	29.536	29.508	66	71	65	69	75	68	70.7	78	58	599	704	577	623	
22	29.617	29.584	29.582	29.594	56	61	55	60	64	58	60.7	70	48	396	497	393	423	
23	29.662	29.692	29.750	29.708	54	56	52	58	62	55	58.3	62	43	365	369	349	341	
24	29.900	29.886	29.879	29.888	56	59	62	59	67	63	63.0	69	42	409	393	510	437	
25	29.940	29.899	29.891	29.910	56	72	62	59	81	70	70.0	82	42	409	663	449	501	
26	29.872	29.741	29.745	29.786	58	73	65	62	85	72	73.0	85	47	429	650	524	501	
27	29.781	29.805	29.804	29.797	62	63	62	66	72	65	67.7	72	53	502	455	516	491	
28	29.870	29.828	29.817	29.838	52	63	57	55	70	61	62.0	74	43	349	482	412	414	
29	29.831	29.840	29.932	29.868	47	66	58	51	77	62	63.3	77	52	270	492	429	355	
30	29.999	29.892	29.908	29.933	51	72	69	55	80	72	69.0	81	49	321	677	668	555	
31	29.935	29.813	29.809	29.852	67	81	75	72	91	82	81.7	91	54	595	921			

\* The mean of 28 observations.

† The mean of 30 observations.

northern and northwestern lakes, at Charlotte, New York.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
58	.776	.812	.782	SW ...	NE....	S. SE..	4	25	35	8.7	S. 70 E..	5	7	10		.04
43	.796	.841	.827	SW ...	N. NW.	SW ...	35	35	25	12.7	S. 79 W.	5	10	9		.26
96	.595	.457	.616	W.....	SW ...	S.....	25	35	2	18.7	S. 62 W.	3	10	5		
50		.843	.847	SW ...		N.....	35		12	9.3	S. 64 W.	8		10		
31	.663	.735	.676	NW ...	N.....	NW ...	12	12	2	8.0	N. 24 W.	8	3	8		
70	.545	.789	.668	SW ...	S.....	S. SW.	4	25	4	10.7	S. 8 W.	10	7	8		
34	.585	.793	.704	N. NW.	NW ...	NW ...	25	45	12	26.7	N. 38 W.	7	5	2		.10
31	.531	.802	.688	N.....	N.....	NW ...	4	4	4	3.7	N. 15 W.	9	8	7		
31	.704	.836	.790	N.....	N.....	NW ...	4	12	4	6.3	N. 7 W.	4	4	7		
85	.504	.740	.643	N.....	NE....	NE....	4	25	12	13.3	N. 41 E.	7	8	4		
27	.693	.658	.693	S.....	NE....	N.....	2	12	4	4.7	N. 39 E.	10	4	0		.05
47	.734	.751	.710	S.....	N.....	S.....	12	4	2	3.3	South ..	3	10	10		
67	.470	.698	.612	SW ...	N. NW.	W.....	45	45	4	18.0	N. 80 W.	10	8	2		.07
38	.441	.822	.667	NW ...	N.....	S.....	12	35	4	13.3	N. 12 W.	1	4	2		
47	.575	.769	.697	SW ...	N. NE	S.....	2	4	2	0.1	N. 19 E.	8	10	10		
61	.822	.824	.822	NE....	NE....	N. NE.	35	45	25	34.7	N. 40 E.	10	10	10		
69		.841	.805	N.....		SW ...	25		4	7.7	N. 7 W.	2		2		.07
65	.647	.802	.705	SW ...	SW ...	SW ...	35	45	45	41.7	S. 45 W.	8	8	3		
75	.793	.780	.749	S. SW	SE....	N.....	35	12	4	12.3	S. 7 W.	7	10	10		
80	.693	.854	.776	N. NW.	N.....	S.....	4	35	12	8.7	N. 3 W.	3	4	4		.30
31	.613	.735	.693	SW ...	N.....	N.....	12	25	2	6.7	N. 25 W.	8	8	7		
80	.563	.891	.711	NE....	NE....	S.....	45	12	2	18.7	N. 46 W.	3	2	0		
33	.768	.852	.818	W.....	N. NW.	W.....	4	25	2	9.3	N. 34 W.	8	2	2		
75	.623	.796	.698	SW ...	N.....	S.....	2	12	4	2.9	N. 12 W.	2	6	2		
77	.792	.810	.760	S.....	S.....	SW ...	12	45	35	28.3	S. 17 W.	4	9	6		
95	.537	.758	.663	W. SW	N. NW.	W. SW	45	60	12	25.0	N. 68 W.	10	6	7		.47
751	.608	.761	.707	W.....	N.....	SW ...	4	12	2	4.0	N. 27 W.	3	3	9		
47		.860	.824	NW ...		N.....	2		2	1.3	N. 27 W.	7		10		
80	.545	.740	.755	S.....	N.....	NW ...	2	25	4	8.7	N. 5 W.	8	4	1		.10
82	.790	.876	.849	NE....	N.....	S.....	35	25	2	17.7	N. 27 E.	8	2	0		
94	.539	.895	.743	S.....	NE....	E. NE.	2	25	25	16.0	N. 58 E.	10	2	2		
736	.680	.789	.738							3.9	N. 46 W.	6.4	6.2	5.4		1.46
	*												*			
72	.632	.863	.756	E.....	E.....	S.....	2	12	2	5.0	S. 80 E..	3	7	10		
58	.626	.824	.736	SE....	E.....	SW ...	2	12	4	3.7	S. 4 E..	9	4	8		
104	.556	.711	.657	S.....	S. SW	SE....	2	12	12	7.7	S. 10 E..	2	5	3		
20	.741	.810	.757	N.....	N.....	N.....	2	12	2	4.7	North ..	3	8	10		
96	.627	.900	.774	N.....	N.....	SW ...	2	12	4	4.0	N. 13 W.	4	4	3		.03
110	.787	.810	.802	E.....	S.....	SW ...	12	4	25	7.3	S. 15 W.	7	10	2		
31	.639	.700	.690	SW ...	W.....	NW ...	25	45	12	24.0	S. 83 W.	10	6	7		.33
23	.531	.700	.651	NW ...	N.....	S.....	12	25	4	10.3	N. 16 W.	2	5	2		
93	.727	.899	.806	W. SW	NW ...	W.....	12	25	2	11.0	N. 66 W.	1	4	8		
48	.779	.846	.824	S. SW	NW ...	NW ...	4	35	35	22.7	N. 48 W.	10	7	5		
28	.743	.780	.777	NW ...	NW ...	W.....	25	35	12	23.0	N. 38 W.	10	8	10		.65
53	.487	.882	.674	NE....	N.....	SW ...	25	12	12	7.7	N. 24 E.	9	0	0		
65	.672	.793	.743	W.....	N.....	S.....	2	2	2	0.7	West ..	0	10	2		
23	.815	.799	.779	SW ...	N. NE	NW ...	2	12	2	4.0	N. 9 E.	2	2	2		
38	.711		.775	SW ...	N.....		4	12		3.3	N. 17 W.	0	2			
140	.658	.843	.747	N.....	NE....	N.....	35	25	12	22.3	N. 15 E.	6	6	4		
708	.524	.772	.668	NE....	NE....	W.....	12	25	2	12.0	N. 43 E.	2	2	0		
22	.574	.896	.764	S.....	E.....	S.....	12	12	4	7.0	S. 37 E.	2	1	1		
33	.520	.802	.738	SW ...	N.....	SW ...	12	12	4	3.7	N. 86 W.	8	7	1		
151	.410	.734	.632	S.....	SW ...	NW ...	25	25	4	14.7	S. 27 W.	4	9	10		
46	.812	.843	.834	SW ...	NW ...	W.....	25	12	12	13.3	S. 76 W.	4	9	10		
765	.833	.816	.805	NE....	NE....	NW ...	45	25	4	23.3	N. 42 E.	10	10	2		.16
756	.665	.805	.742	N. NW	N. NE	NW ...	45	45	12	30.7	N. 5 W.	8	7	5		
919	.595	.826	.767	N.....	NW ...	W.....	25	12	4	12.0	N. 21 W.	5	7	10		
919	.627	.613	.686	SW ...	SW ...	SW ...	12	12	4	9.3	S. 45 W.	2	4	2		
772	.540	.668	.660	W. SW	W. SW	SW ...	12	45	35	30.0	S. 59 W.	0	3	2		
786	.582	.836	.735	N. NW	NW ...	W. NW	12	12	4	9.0	N. 37 W.	10	10	3		
905	.658	.769	.744	SE....	NE....	SW ...	4	25	4	7.0	N. 55 E.	4	5	0		
722	.531	.772	.695	S.....	N.....	SW ...	2	4	4	1.0	S. 74 W.	10	0	0		
743	.661	.852	.752	S.....	NE....	NE....	2	25	4	9.3	N. 48 E.	3	3	0		
758	.634	.708	.700	S.....	N.....	SW ...	12	4	4	3.7	S. 13 W.	10	7	8		
771	.643	.798	.739							4.4	N. 42 W.	5.1	5.5	4.3		1.17
	†												†			



Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					°	°	°	°	°	°	°	°	°					
Nov.																		
1	30.109	29.984	29.826	29.973	37	47	40	40	52	45	45.7	53	26	181	257	182	214	
2	29.704	29.677	29.801	29.727	50	50	45	53	55	47	51.7	55	33	321	285	273	293	
3	29.857	29.590	29.331	29.593	35	49	45	37	54	47	46.0	55	28	178	232	171	244	
4	29.598	29.438	29.371	29.469	37	48	45	39	52	47	46.0	52	28	194	222	213	243	
5	29.380	29.513	29.725	29.539	33	32	32	36	35	34	35.0	47	22	149	142	135	143	
6	29.618	29.360	29.437	29.472	31	38	38	33	40	41	38.0	41	21	151	213	174	211	
7	29.959	30.171	30.221	30.117	27	30	26	29	32	28	29.7	42	17	124	144	117	140	
8	30.181	29.947	29.740	29.956	26	32	36	28	37	40	35.0	40	14	117	116	161	131	
9	29.876	30.018	30.147	30.014	34	39	33	41	44	37	40.7	46	26	105	173	128	160	
10	30.021	30.398	30.401	30.273	30	30	30	32	31	32	31.7	37	20	144	155	144	147	
11	30.419	30.333	30.281	30.344	28	31	27	29	35	28	30.7	37	17	143	128	119	127	
12	30.141	30.108	29.894	30.048	26	49	43	28	52	40	42.0	52	16	117	378	274	181	
13	29.796	29.650	29.646	29.697	42	53	46	45	58	49	50.7	58	38	228	336	371	311	
14	29.613	29.576	29.581	29.590	45	60	48	50	67	51	56.0	66	35	234	425	294	317	
15	29.628	29.621	29.637	29.629	44	52	50	48	66	56	56.7	64	36	236	293	352	294	
16	29.761	29.661	29.565	29.662	44	52	53	47	73	57	59.0	73	35	249	110	351	136	
17	29.564	29.481	29.658	29.568	57	59	44	61	65	48	58.0	66	39	412	420	226	254	
18	29.838	29.921	29.842	29.867	39	40	40	42	43	43	42.7	48	30	199	247	214	219	
19	29.906	29.921	30.008	29.945	38	40	31	41	43	33	39.0	43	22	190	277	151	138	
20	29.999	29.831	29.770	29.867	28	40	38	29	43	40	37.3	43	18	142	277	296	174	
21	29.677	29.534	29.415	29.575	39	39	36	41	42	38	40.3	43	17	212	192	186	197	
22	29.193	29.160	29.305	29.219	34	34	33	35	36	34	35.0	39	23	183	170	175	182	
23	29.398	29.547	29.634	29.526	35	38	30	37	41	32	36.7	42	23	178	190	144	171	
24	29.820	29.894	29.862	29.859	37	38	37	40	42	39	40.7	42	23	181	177	124	161	
25	29.787	29.726	29.772	29.762	35	42	41	37	45	43	41.7	42	25	178	222	231	210	
26	29.829	29.776	29.758	29.788	37	44	35	40	49	37	42.0	49	26	181	223	173	194	
27	29.650	29.554	29.825	29.676	33	36	33	36	42	34	37.3	43	23	149	134	175	152	
28	29.923	29.928	29.921	29.924	29	32	27	31	33	28	30.7	34	17	137	168	136	145	
29	29.769	29.690	29.648	29.702	28	35	32	29	40	33	34.0	40	16	142	139	164	148	
30	29.518	29.287	29.097	29.301	32	38	39	33	41	41	38.3	41	20	168	190	212	190	
Means....	29.788	29.743	29.737	29.756	....	....	....	38.2	46.3	40.3	41.6	....	....	184	214	202	207	
Dec.																		
1	29.263	29.328	29.483	29.358	33	33	32	35	37	35	35.7	41	24	162	136	142	147	
2	29.555	29.360	29.346	29.420	32	36	40	34	40	45	39.7	45	22	155	124	181	146	
3	29.789	29.800	29.788	29.792	38	43	42	40	47	44	43.7	66	29	213	215	241	223	
*4	29.660	29.736	29.876	29.757	53	54	42	59	56	45	53.3	62	33	323	301	238	314	
*5	30.131	30.087	30.041	30.086	31	32	31	32	37	32	33.7	45	20	162	116	162	145	
*6	30.004	29.843	29.681	29.843	26	35	31	27	45	33	35.0	44	16	129	074	131	119	
*7	29.363	29.508	29.789	29.553	32	32	27	35	37	29	33.7	39	16	140	110	124	125	
*8	29.978	30.023	30.033	30.011	23	30	30	24	31	31	28.7	36	13	112	155	115	141	
9	30.027	29.665	29.525	29.739	25	37	32	26	38	34	32.7	37	16	123	207	115	162	
10	29.605	29.582	29.608	29.598	32	40	35	34	43	37	38.0	43	22	155	277	178	189	
11	29.700	29.701	29.680	29.694	38	43	38	40	51	40	43.7	51	26	203	173	231	192	
12	29.566	29.465	29.605	29.545	46	55	51	49	57	53	53.0	58	30	271	407	348	342	
13	30.031	30.011	29.999	30.014	27	31	24	28	32	25	28.3	52	14	136	162	117	138	
14	29.995	29.988	29.939	29.974	21	21	13	23	22	14	19.7	37	4	090	101	087	095	
15	30.009	30.027	29.946	29.994	13	25	14	14	26	15	18.3	26	13	067	123	071	084	
16	29.992	29.907	29.866	29.922	12	25	18	13	26	19	19.3	26	1	063	123	071	081	
17	29.916	29.912	29.912	29.913	14	32	23	15	35	24	24.7	36	3	071	142	112	108	
18	29.981	29.942	29.378	29.767	27	33	32	28	35	33	32.0	33	9	136	149	164	151	
19	29.855	.....	29.452	29.404	40	...	37	42	...	39	40.5	48	23	221	...	194	206	
20	29.937	29.819	29.543	29.767	24	20	19	25	25	20	23.3	39	12	117	050	082	086	
21	29.308	29.642	29.870	29.607	17	23	20	18	24	21	21.0	39	7	083	112	086	087	
22	29.844	29.800	30.091	29.912	14	20	16	15	21	17	17.7	21	3	071	083	081	076	
23	30.280	29.981	29.979	30.080	9	27	13	10	28	14	17.3	29	3	054	134	067	066	
24	29.573	29.362	29.385	29.440	30	37	32	31	39	34	34.7	40	3	155	194	115	168	
25	29.440	29.464	29.630	29.511	38	43	38	40	46	40	42.0	46	22	203	274	293	215	
26	29.601	29.516	29.466	29.528	31	43	43	32	45	45	40.7	47	20	162	251	251	221	
27	29.310	29.695	29.862	29.622	38	37	33	40	38	35	37.7	44	25	203	287	162	191	
28	29.908	.....	29.971	29.939	32	...	31	33	...	32	32.5	35	24	168	...	162	165	
29	30.066	30.156	30.141	30.121	29	28	27	30	30	28	29.3	30	16	149	134	118	138	
30	30.135	29.901	29.959	29.998	22	31	28	23	32	29	28.0	32	17	107	162	142	151	
31	30.058	29.869	29.791	29.906	21	38	31	22	40	32	31.3	39	11	101	203	162	155	
Means....	29.754	29.762	29.762	29.768	....	....	....	29.6	36.7	31.4	32.5	....	....	145	170	135		

orthern and northwestern lakes, at Charlotte, New York.

VAPOR.			WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. saturation = 1,000.			Direction. From whence.			Velocity in miles, per hour.			Resultant velocity. in miles, per hour.	Resultant direction.					
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
.660	.607	.666	W....	E. SE.	SE....	4	12	12	6.7	S. 49 E.	10	8	10	.....	.02
.681	.847	.775	S. SW.	W....	W. SW.	12	25	12	13.3	S. 69 W.	10	10	10	.....	.01
.674	.847	.776	W. SW.	NE....	S....	4	4	12	3.3	S. 5 W.	4	5	9	.....	.....
.727	.847	.797	S....	S....	NW....	25	4	12	7.3	S. 23 W.	10	10	10	.....	.....
.618	.792	.732	N....	NW....	NW....	60	60	45	36.7	N. 43 W.	10	10	10	.....	.43
.820	.738	.786	S....	SW....	SW....	25	75	45	46.3	S. 38 W.	10	10	10	.....	.09
.794	.768	.779	NW....	NW....	SW....	35	12	12	16.0	N. 59 W.	8	10	10	.....	.16
.527	.645	.647	S....	S. SE.	S....	12	12	12	12.0	S. 7 E.	9	10	8	.....	.....
.597	.619	.508	W....	N. NW.	N....	25	35	35	25.7	N. 29 W.	8	10	10	.....	.....
.893	.791	.817	N....	N. NE.	N....	35	12	12	19.7	N. 4 E.	10	10	10	.....	.....
.628	.883	.799	S. SE.	E. SE.	E....	25	12	4	12.3	S. 41 E.	10	5	5	.....	.....
.794	.767	.776	S....	W....	SW....	12	25	25	17.3	S. 55 W.	8	8	3	.....	.....
.694	.781	.747	SW....	W. SW.	SW....	12	35	25	23.7	S. 56 W.	4	10	0	.....	.....
.642	.790	.693	SW....	SW....	SW....	25	12	25	20.7	S. 45 W.	7	2	2	.....	.....
.318	.627	.550	S....	S....	SW....	25	12	12	15.3	S. 11 W.	8	7	0	.....	.....
.135	.752	.553	S....	S....	SW....	12	4	25	12.7	S. 28 W.	5	3	0	.....	.....
.680	.704	.718	S....	W....	N....	35	60	25	20.3	S. 80 W.	6	3	0	.....	.....
.750	.750	.748	N....	N....	NE....	2	4	12	5.7	N. 31 E.	10	10	10	.....	.....
.750	.800	.763	N....	N....	SW....	35	35	12	20.7	N. 8 W.	10	5	0	.....	.....
.750	.820	.819	S....	E....	S....	2	12	12	6.3	S. 40 E.	2	10	10	.....	.....
.744	.811	.793	SE....	E....	NE....	25	12	45	21.0	N. 77 E.	10	10	10	.....	.....
.802	.895	.865	N....	NW....	SW....	35	25	25	16.3	N. 46 W.	10	10	10	.....	.72
.738	.794	.780	NE....	N....	N. NW.	35	45	35	34.3	N. 6 E.	10	10	10	.....	.71
.661	.816	.736	N. NE.	N....	W....	25	12	12	12.0	N. 4 W.	10	10	10	.....	.....
.762	.833	.801	SW....	SW....	NW....	12	4	12	6.7	S. 82 W.	10	10	10	.....	.....
.638	.807	.726	N. NE.	N. NE.	SW....	12	12	12	4.3	N. 4 E.	10	5	8	.....	.....
.500	.895	.700	SW....	NW....	N. NW.	12	45	35	25.7	N. 44 E.	6	3	5	.....	.....
.893	.883	.855	N....	N. NW.	S....	25	12	2	11.7	N. 8 W.	5	10	10	.....	.....
.557	.893	.779	E....	S....	SE....	25	25	35	23.3	S. 45 E.	10	10	10	.....	.....
.738	.824	.818	SE....	SE....	S....	35	45	35	36.6	S. 32 E.	10	10	10	.....	.....
.675	.788	.745	.....	.....	.....	.....	.....	.....	1.4	N. 89 W.	8.3	8.1	7.3	.....	2.14
.619	.698	.705	SW....	W....	NW....	12	35	35	23.3	N. 17 W.	10	10	5	.....	0.05
.645	.607	.681	SW....	S....	S....	4	12	4	6.3	S. 7 W.	10	10	10	.....	.....
.698	.836	.781	NW....	NE....	NE....	4	12	25	12.7	N. 38 E.	10	10	10	.....	.....
.872	.762	.760	S....	NW....	NW....	12	35	12	13.3	N. 58 W.	10	10	10	.....	0.35
.527	.896	.773	N. NW.	NW....	NW....	35	12	12	19.3	N. 32 W.	9	2	2	.....	0.03
.244	.800	.641	SW....	W....	S....	4	4	4	3.0	S. 27 W.	2	2	10	.....	.....
.527	.775	.667	W....	SW....	NW....	4	35	60	32.7	N. 47 W.	10	10	10	.....	.....
.893	.893	.885	NW....	NW....	NW....	4	25	12	13.7	S. 45 W.	7	10	10	.....	.....
.905	.792	.858	S....	S. SE.	S....	4	12	35	17.0	S. 5 E.	3	10	10	.....	.....
.750	.807	.783	SW....	S....	S....	12	12	12	11.3	S. 15 W.	10	10	10	.....	0.04
.461	.820	.700	S....	E. SE.	SE....	12	4	25	12.7	S. 35 E.	9	7	10	.....	.....
.874	.864	.840	S....	S....	SW....	45	25	45	35.3	S. 17 W.	10	10	10	.....	.....
.896	.872	.884	W....	NW....	SW....	25	12	12	14.0	West...	8	10	1	.....	.....
.860	.816	.862	NW....	W....	W....	35	45	45	39.0	N. 78 W.	10	3	10	.....	.....
.876	.823	.838	W....	W....	W....	35	25	12	24.0	West...	10	5	0	.....	0.03
.876	.845	.844	SW....	S. SE.	SE....	4	12	12	8.3	S. 25 E.	10	10	10	.....	.....
.698	.868	.796	SE....	SE....	SE....	2	2	2	2.0	S. 45 E.	7	2	0	.....	.....
.705	.893	.827	SE....	SE....	E....	2	4	12	5.7	S. 75 E.	10	10	10	.....	.....
.....	.816	.823	S. SW.	.....	SW....	12	.....	45	18.7	S. 41 W.	10	.....	10	.....	0.05
.378	.850	.700	N....	NE....	NE....	35	35	45	36.0	N. 32 E.	10	10	10	.....	0.48
.868	.855	.854	W. NW.	NW....	SW....	45	45	12	30.3	N. 64 W.	10	7	10	.....	.....
.855	.834	.837	S....	SW....	W....	4	25	35	19.0	S. 68 W.	10	10	10	.....	0.03
.883	.816	.830	W. SW.	SW....	S....	12	25	12	15.0	S. 40 W.	9	7	10	.....	0.24
.816	.792	.834	S....	S....	S....	25	12	12	16.3	South...	10	7	5	.....	0.01
.767	.820	.802	W. SW.	SW....	SW....	35	35	25	31.0	S. 53 W.	7	8	1	.....	.....
.840	.840	.859	E....	S....	W....	4	12	2	4.3	S. 9 E.	8	8	10	.....	.....
.905	.797	.841	N. NW.	W....	N....	35	25	25	23.0	N. 34 W.	10	10	10	.....	0.51
.....	.896	.894	E....	.....	SW....	2	.....	4	1.0	S. 15 W.	10	.....	10	.....	.....
.782	.883	.852	W. NW.	NW....	N. NW.	12	25	12	15.7	N. 45 W.	10	10	10	.....	0.12
.896	.887	.882	N....	N....	W....	25	4	4	10.0	N. 8 W.	10	10	8	.....	.....
.820	.896	.859	S....	S....	S....	2	25	35	20.7	South...	0	0	2	.....	.....
.749	.828	.804	.....	.....	.....	.....	.....	.....	7.8	S. 85 W.	8.6	7.8	7.9	.....	1.94

Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					0	0	0	0	0	0	0							
Jan.	1	29.847	29.764	29.883	29.831	35	40	30	37	42	31	36.7	41	21	.175	.921	.535	.544
	2	30.055	.....	29.842	29.949	22	....	23	23	....	24	24.0	37	14	.107	.....	.11	.....
	3	29.795	29.675	29.668	29.713	22	36	32	23	38	33	31.3	39	10	.107	.186	.16	.....
	4	29.577	29.673	29.890	29.690	25	19	9	26	20	10	18.7	34	-1	.123	.092	.05	.....
	5	29.969	29.917	30.000	29.962	2	10	9	3	11	10	08.0	30	-9	.038	.057	.25	.....
	6	30.197	30.193	30.221	30.204	10	8	5	11	9	6	08.7	17	-6	.057	.051	.043	.....
	7	30.613	30.688	30.823	30.708	-3	-1	-3	-2	0	-2	02.0	17	-14	.026	.03	.02	.....
	8	30.989	30.919	30.810	30.906	-3	6	2	-3	7	3	04.3	10	-14	.015	.046	.08	.....
	9	30.756	30.651	30.535	30.647	1	26	11	1	27	12	13.3	28	12	.034	.12	.06	.....
	10	30.283	30.104	29.879	30.089	5	26	28	5	27	29	20.3	29	-6	.....	.12	.14	.....
	11	29.921	29.862	29.812	29.865	31	36	33	32	39	35	35.3	39	19	.162	.133	.16	.....
	12	29.726	29.550	29.405	29.560	29	34	36	30	36	38	34.7	38	19	.149	.170	.....	.....
	13	29.317	.....	29.619	29.468	38	....	28	41	....	29	35.0	41	17	.13	.....	.4	.....
	14	30.118	30.125	30.211	30.151	6	7	5	7	8	6	67.0	30	-3	.046	.04	.14	.....
	15	30.311	30.157	29.769	30.079	5	10	9	6	11	10	09.0	38	-6	.04	.057	.64	.....
	16	29.433	29.449	29.504	29.462	30	28	26	31	29	27	29.0	32	0	.15	.142	.12	.....
	17	29.717	29.620	29.418	29.605	25	34	35	26	36	37	33.0	37	15	.123	.170	.17	.....
	18	29.561	29.484	29.541	29.529	31	42	31	32	45	32	36.3	49	19	.16	.2	.22	.....
	19	29.575	29.592	29.578	29.582	32	37	36	34	39	37	36.7	40	20	.155	.194	.....	.....
	20	29.348	29.524	29.748	29.540	48	26	13	52	27	14	31.0	52	4	.27	.12	.57	.....
	21	29.905	29.836	29.741	29.827	7	14	12	8	15	13	12.0	29	2	.048	.071	.....	.....
	22	29.768	29.795	29.862	29.810	13	22	17	14	23	18	18.3	23	2	.067	.107	.08	.....
	23	30.052	30.011	.....	30.032	12	27	....	13	28	....	20.5	....	....	.063	.136	.....	.....
	24	30.086	30.014	29.907	30.002	14	26	25	15	27	26	22.7	29	3	.071	.12	.12	.....
	25	29.515	29.428	29.507	29.483	22	32	25	23	33	26	27.3	26	14	.107	.12	.13	.....
	26	29.553	29.694	29.705	29.651	21	26	22	22	27	23	24.0	26	12	.101	.12	.107	.....
	27	29.883	29.926	29.855	29.888	19	29	22	20	30	23	24.3	34	10	.092	.142	.107	.....
	28	29.834	29.749	29.681	29.755	15	25	24	16	28	25	23.0	31	2	.074	.10	.117	.....
	29	29.769	29.755	29.721	29.748	24	37	32	25	38	32	31.7	36	12	.117	.207	.181	.....
	30	29.511	28.372	29.430	29.432	31	32	34	32	39	36	35.7	39	18	.162	.216	.170	.....
	31	29.505	29.375	29.216	29.365	22	33	29	23	34	30	29.0	36	14	.107	.175	.149	.....
Means....		29.881	29.861	29.826	29.857	....	....	....	20.2	26.6	22.3	23.3	....	....	.106	.132	.112	.11
Feb.	1	29.257	29.225	29.300	29.281	25	22	20	26	23	21	23.3	30	10	.122	.107	.096	.12
	2	29.465	29.361	29.363	29.396	18	25	19	19	28	20	22.3	28	18	.087	.100	.092	.09
	3	29.488	29.463	29.476	29.476	13	19	14	14	20	15	16.3	22	3	.067	.092	.07	.07
	4	29.666	29.633	29.827	29.709	10	18	10	11	20	11	14.0	21	-1	.057	.076	.057	.05
	5	30.248	30.296	30.027	30.190	6	14	10	7	15	11	11.0	16	-4	.046	.071	.057	.05
	6	30.211	30.402	30.309	30.307	16	16	13	17	17	14	16.0	20	-2	.072	.078	.067	.07
	7	30.134	30.020	29.903	30.019	15	35	30	16	36	31	27.7	36	-3	.074	.191	.155	.14
	8	29.914	29.830	29.757	29.834	27	33	25	28	36	26	30.0	38	17	.136	.149	.123	.126
	9	29.815	29.751	29.599	29.722	22	31	28	23	32	29	28.0	35	12	.107	.162	.14	.137
	10	29.575	29.556	29.585	29.572	36	42	37	38	45	38	40.3	45	18	.186	.22	.207	.21
	11	29.562	29.560	29.788	29.617	37	35	31	39	36	33	36.0	39	23	.194	.191	.15	.19
	12	29.984	29.877	29.719	29.860	26	25	28	27	26	29	27.3	33	15	.129	.123	.142	.131
	13	29.863	29.872	29.838	29.858	29	37	32	31	39	33	34.3	39	18	.157	.194	.128	.165
	14	29.438	29.314	29.288	29.347	32	39	32	33	42	33	36.0	41	22	.168	.190	.16	.174
	15	29.532	28.679	29.858	29.690	4	9	6	5	10	7	07.3	34	-5	.04	.054	.046	.047
	16	30.103	30.160	30.172	30.145	-2	9	2	-2	10	2	03.3	11	-12	.02	.054	.047	.047
	17	30.216	30.042	29.928	30.062	14	37	32	15	40	33	29.3	41	-9	.07	.181	.16	.147
	18	29.957	29.824	29.545	29.775	25	36	33	26	38	34	32.7	37	14	.123	.18	.175	.161
	19	29.350	29.250	29.385	29.328	34	37	33	36	40	34	36.7	40	17	.170	.181	.175	.17
	20	29.601	29.655	29.812	29.692	27	....	23	28	....	24	25.0	23	12	.126	....	.12	.12
	21	30.169	30.112	29.957	30.079	13	37	35	14	39	37	30.0	45	4	.067	.194	.17	.146
	22	29.936	29.916	29.803	29.912	40	54	44	43	56	46	48.3	57	27	.247	.391	.282	.287
	23	29.874	29.720	29.628	29.761	40	47	46	42	51	48	47.0	53	33	.221	.270	.24	.26
	24	29.341	29.358	29.531	29.410	48	36	31	51	37	32	40.0	51	23	.246	.198	.162	.169
	25	29.911	30.026	30.167	30.035	16	15	10	17	16	11	14.7	42	-2	.072	.074	.07	.07
	26	30.496	30.421	30.306	30.408	7	27	14	8	28	15	17.0	30	-2	.04	.136	.071	.085
	27	30.087	30.106	30.089	30.127	25	37	27	26	41	29	32.0	41	4	.123	.162	.134	.13
	28	30.159	30.094	29.938	30.064	27	35	32	29	38	33	33.3	38	18	.124	.165	.16	.132
Means....		29.834	29.812	29.786	29.811	....	....	....	24.2	31.5	26.0	27.1	....	....	.129	.156	.134	.12

*The northern and northwestern lakes, at Charlotte, New York.*

827	828	838	825					7.1	N. 69 W	8.3	7.9	7.7		1.68
876	864	855	865	NW	W	W	35	35	45	35.7	N. 13 W.	10	10	
843	855	850	863	W	W	W	35	23	12	24.0	West	10	10	0.35
816	850	823	830	W	W	W	60	69	60	60.0	West	10	10	0.03
797	702	797	765	SW	SW	W	45	45	45	42.0	S. 59 W.	5	10	
769	821	797	763	W	W SW	S	25	25	4	16.7	S. 74 W.	8	4	0.18
804	814	816	828	W	N	S	35	45	2	18.7	N. 39 W.	10	10	0.02
829	903	893	874	S	S. SE	S	12	12	12	12.0	S. 7 E	7	10	
841	705	876	821	S	SE	NE	2	35	35	23.0	N. 46 E	10	10	
844	886	887	882	E	E. SE	S	2	12	4	5.3	S. 59 E	10	10	0.25
811	762	905	826	S	S	SE	35	2	2	12.7	S. 2 E	10	10	
816	900	890	839	S	N	N. NW	2	25	25	15.7	N. 12 W	10	10	0.11
820	879	887	881	N	N	N	25	35	45	35.0	North	10	10	0.31
782	816	893	832	N. NW	N	SW	4	2	2	1.7	N. 31 W.	10	10	
803	744	893	843	S. SW	SW	W	45	4	60	30.7	S. 61 W.	10	10	0.03
720	791	769	770	W	W	NW	60	60	45	51.7	N. 78 W	3	10	
800	791	1.000	930	W. SW	SW	S	45	25	2	23.3	S. 58 W.	6	3	0.33
821	732	893	816	S	S. SW	N	35	45	45	41.0	S. 8 W	3	3	
876	81	895	861	S	S	SE	12	4	4	6.3	S. 8 E	7	10	
802	732	895	810	SW	SW	W	2	12	12	7.7	S. 66 W	10	10	0.01
803	808	876	817	W	W. SW	SW	4	45	12	20.0	S. 65 W	10	10	0.03
816	816	807	811	W SW	S	S	4	12	25	13.0	S. 5 W	3	8	0.02
750	802	843	822	S	S	S	45	12	4	20.3	South	6	0	
829	723	850	800	W. NW	S	S	4	12	12	7.7	S. 9 W.	9	10	
790	903	896	843	S	NW	W	35	25	35	18.3	S. 71 W	10	10	0.17
804	829	797	820	N	N	N	45	45	35	41.7	North	10	10	0.33
777	822	803	824	NW	S	S	4	4	12	4.7	S. 11 W.	6	5	0.10
876	621	775	768	S	N	N	4	12	12	6.7	North	10	3	0.02
775	719	893	796	N NE	NE	E. SE	12	12	4	8.3	N. 42 E	10	10	
832	821	856	829						11.0	S. 83 W.	8.3	8.4	7.9	2.28

Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1866.					°	°	°	°	°	°	°	°	°	°				
March	1	29.192	29.810	29.778	29.593	40	54	46	43	59	48	50.0	59	32	208	35	27	29
	2	29.836	29.855	29.692	29.794	41	48	36	44	53	39	45.3	55	31	215	24	24	29
	3	29.716	29.718	29.710	29.715	42	48	40	45	52	40	45.7	51	32	224	24	24	29
	4	29.669	29.724	.....	29.697	28	25	....	29	27	....	28.0	....	....	142	112	112	29
	5	29.900	29.839	29.864	29.868	20	27	25	21	29	27	25.7	41	10	056	124	112	29
	6	29.967	29.926	29.815	29.903	20	28	22	22	30	23	25.0	32	11	083	135	112	29
	7	29.632	29.717	29.765	29.701	22	23	22	24	26	23	24.3	33	12	095	073	112	29
	8	29.835	29.814	29.795	29.815	18	26	22	19	27	23	23.0	28	8	087	124	107	29
	9	29.775	29.707	29.822	29.768	18	25	23	19	26	24	23.0	28	6	087	123	112	29
	10	30.135	30.115	29.955	30.068	14	32	22	15	34	23	24.0	33	4	071	155	117	29
	11	29.581	29.470	29.452	29.501	27	38	41	28	40	43	37.0	43	4	136	203	23	29
	12	29.683	29.743	29.958	29.795	33	33	32	35	35	33	34.3	44	22	162	162	168	29
	13	30.068	30.175	30.005	30.113	31	33	33	33	34	34	33.7	34	22	151	175	175	29
	14	29.833	29.785	29.782	29.800	33	53	40	35	56	43	44.7	58	22	162	363	24	29
	15	29.828	29.690	29.553	29.690	35	34	33	37	36	35	36.0	42	24	172	170	172	29
	16	29.470	29.404	29.355	29.410	34	40	32	36	42	34	37.3	42	23	170	221	155	29
	17	29.510	29.573	29.672	29.585	20	17	13	21	18	14	17.3	34	2	096	083	071	29
	18	29.775	29.597	29.557	29.643	18	25	25	19	26	26	23.7	26	0	078	127	125	29
	19	29.787	29.789	29.809	29.793	21	28	24	22	29	25	25.3	36	9	101	142	117	29
	20	29.872	29.721	29.504	29.699	23	26	26	24	28	27	26.3	22	10	112	117	129	29
	21	29.313	29.396	29.681	29.460	33	28	27	35	30	28	31.0	32	16	162	130	136	29
	22	29.951	29.925	30.004	29.980	27	32	28	28	34	30	30.7	35	13	136	162	139	29
	23	29.628	29.509	29.442	29.560	31	41	37	33	44	39	38.7	44	18	151	218	194	29
	24	29.643	29.485	29.453	29.527	29	32	29	31	34	31	32.0	40	21	137	155	157	29
	25	29.525	29.640	29.605	29.590	14	16	14	15	17	15	15.7	32	3	071	078	071	29
	26	29.750	29.859	29.939	29.849	16	26	24	17	28	25	23.3	28	4	078	117	117	29
	27	29.132	30.155	30.164	29.817	19	32	26	20	34	27	27.0	35	6	092	155	139	29
	28	30.029	29.742	29.582	29.784	28	36	36	29	39	38	35.3	39	10	142	173	185	29
	29	29.530	29.548	29.648	29.575	34	35	32	36	37	33	35.3	38	21	170	170	168	29
	30	29.666	29.648	29.583	29.632	29	36	29	30	37	31	32.7	37	18	142	152	137	29
	31	29.423	29.214	29.294	29.310	32	38	39	35	42	42	39.7	43	20	142	177	190	29
Means....		29.689	29.715	29.710	29.708	....	....	....	25.2	31.7	27.2	30.7	....	....	132	170	145	29
April	1	29.625	29.776	29.934	29.778	35	38	35	32	41	38	39.0	42	26	165	190	165	29
	2	29.958	29.916	29.942	29.939	31	33	32	33	41	35	36.3	44	21	151	074	142	29
	3	29.954	29.918	29.809	29.894	35	40	37	38	44	40	40.7	45	18	165	195	181	29
	4	29.775	29.728	29.671	29.725	46	50	43	50	58	47	51.7	59	27	258	255	225	29
	5	29.617	29.612	29.732	29.654	54	64	59	60	76	35	67.0	76	35	365	436	439	29
	6	29.801	29.878	29.954	29.878	40	39	34	43	44	38	41.7	67	27	262	173	141	29
	7	29.998	29.914	29.895	29.936	30	34	30	33	38	34	35.0	38	22	132	144	121	29
	8	29.890	29.891	29.932	29.901	32	36	31	36	42	35	37.7	43	21	129	134	118	29
	9	30.049	30.048	30.017	30.038	28	41	34	29	48	37	38.0	47	16	142	168	157	29
	10	30.034	29.851	29.778	29.888	32	46	45	38	57	48	47.7	57	17	101	165	165	29
	11	29.796	29.794	29.772	29.787	42	47	47	45	55	49	49.7	64	34	228	217	187	29
	12	29.802	29.648	29.529	29.657	44	65	57	50	73	63	62.0	73	31	208	510	34	29
	13	29.865	29.928	29.996	29.910	46	41	38	49	47	41	45.7	68	31	271	179	165	29
	14	29.879	29.506	29.653	29.679	37	60	46	40	67	50	52.3	66	25	121	425	27	29
	15	29.844	29.926	29.610	29.793	38	42	32	42	45	40	42.3	50	20	177	227	165	29
	16	29.999	29.990	29.973	29.987	38	41	44	40	47	46	44.3	47	25	203	179	165	29
	17	30.060	30.067	.....	30.163	46	58	....	51	67	....	59.0	....	....	245	363	194	29
	18	30.034	29.920	29.852	29.935	50	65	61	53	77	65	65.0	77	33	321	521	43	29
	19	29.861	29.945	29.868	29.891	55	56	46	58	64	48	56.7	67	34	393	343	24	29
	20	29.735	29.613	29.475	29.608	61	62	67	64	73	72	69.7	75	36	497	542	36	29
	21	29.464	29.358	29.193	29.338	62	63	59	65	75	62	67.3	75	52	516	415	43	29
	22	29.414	29.344	29.346	29.368	54	57	42	60	64	45	56.3	65	38	338	773	24	29
	23	29.264	28.975	28.825	29.021	38	40	36	42	42	38	40.7	46	27	177	221	165	29
	24	28.960	29.085	29.113	29.053	34	35	36	36	38	39	37.7	39	24	144	165	170	29
	25	29.208	29.282	29.302	29.264	33	37	36	37	43	39	39.7	44	22	136	142	131	29
	26	29.510	29.562	29.659	29.577	33	37	38	36	43	44	41.0	45	24	149	142	147	29
	27	29.822	29.738	29.669	29.743	36	42	41	39	48	44	43.7	48	21	172	181	165	29
	28	29.476	29.342	29.450	29.423	44	64	50	49	76	55	60.0	76	28	223	436	27	29
	29	29.676	29.593	29.677	29.649	42	49	39	45	54	41	46.7	55	30	222	282	21	29
	30	29.735	29.755	29.619	29.703	35	41	41	38	49	44	43.7	52	24	165	153	172	29
Means....		29.731	29.700	29.630	29.700	....	....	....	44.6	56.4	44.7	48.6	....	....	326	277	24	29



thern and northwestern lakes, at Charlotte, New York.

VAPOR.			WIND.									Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. uration = 1, 000.			Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.						
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.	Am't of evaporation, in U. S. inches and decimals.		
.653	.732	.641	W	NE	NW	2	45	25	17.0	N. 14 E.	10	10	10			
.567	.557	.614	S	NW	NW	12	25	35	17.3	N. 54 W.	7	10	10		.04	
.505	.744	.602	W. NW.	W. NW.	W	25	25	12	20.3	N. 72 W.	10	10	10			
.455	.710	.555	W	NW	N	12	45	12	20.7	N. 45 W.	2	7	10			
.592	.847	.732	W. NW.	NW	NW	2	12	4	6.0	N. 47 W.	10	6	1			
.756	.727	.725	W	SW	NW	12	12	12	9.7	West	1	2	2			
.552	.781	.662	NW	N	S	2	4	2	1.3	N. 21 W.	8	0	0			
.756	.646	.702	S	NE	SE	4	25	12	9.0	N. 79 E.	8	10	10			
.502	.733	.671	NW	W	SW	25	12	12	13.3	N. 76 W.	10	6	4		.18	
.627	.727	.656	W	N. NE.	SE	12	12	2	3.7	N. 33 W.	1	1	3			
.502	.756	.621	S	N	S	12	4	4	4.0	South	6	3	7			
.588	.601	.608	SW	N	S	2	2	12	4.0	S. 9 W.	10	1	4			
.772	.756	.796	N. NW	W	W	12	35	45	28.3	N. 82 W.	10	10	10		.35	
.461	.750	.619	N	N	NW	35	12	12	18.7	N. 9 W.	1	3	4		.50	
.470	.624	.613	NW	NW	E. NE.	4	4	12	4.0	N. 26 E.	9	9	10			
.843	.738	.760	NW	NW	NE	12	2	2	17.0	N. 37 W.	10	10	10		.11	
.561	.677	.655	NE	NE	SE	2	12	12	6.3	N. 85 E.	0	5	10			
.665	.738	.712	NE	NE	S	2	2	4	1.0	S. 69 E.	10	7	3			
.713	.703	.659	N	N	SW	4	12	12	3.7	N. 47 W.	0	4	5			
.593	.613	.606	S	E. SE	W. NW	12	12	45	10.0	N. 89 W.	1	2	10			
.502	.684	.604	N. NW	W	NW	12	45	45	30.7	N. 62 W.	6	10	10		.49	
.494	.607	.563	N	N	NW	35	45	25	31.0	N. 11 W.	10	9	10		.02	
.525		.518	W	NW		12	12		7.3	N. 69 W.	10	8				
.519	.434	.446	SW	SW	SW	12	25	25	20.7	S. 45 W.	2	10	6			
.512	.738	.619	SW	W. SW	SW	12	25	25	20.3	S. 54 W.	10	10	0			
.577	.606	.612	S	NE	NE	4	12	12	7.3	N. 53 E.	10	5	5		.01	
.716	.781	.758	E	NE	NE	35	35	45	36.0	N. 68 E.	10	10	10			
.790	.786	.789	SW	NW	W	12	35	4	13.7	N. 67 W.	10	10	3		.50	
.743	.716	.688	SW	W	SW	4	4	12	6.3	S. 54 W.	7	10	6		.28	
	.728	.681	W		SW	12		12	7.3	S. 67 W.	6		10		.10	
.455	.777	.668	N. NW	N	SW	25	25	2	16.0	N. 14 W.	9	3	0		.41	
53	.599	.701	.650						7.1	N. 49 W.	6.8	6.5	6.4		2.99	
.72	.653	.613	.613	S	S	W	4	2	2	2.3	S. 23 W.	3	4	10		
.57	.588	.633	.636	N	S	S	2	2	2	0.7	South	10	3	10		
.81	.802	.802	.762	SE	NE	NE	4	12	12	8.0	N. 53 E	0	10	10		
.629	.772	.703	.703	E	E	N	12	12	12	7.3	N. 63 E	10	10	10		.10
.786	.653	.737	.737	N	NE	NE	12	4	2	5.7	N. 15 E	10	10	0		.18
.843	.659	.761	.761	S	SW	SW	4	2	25	10.0	S. 40 W.	10	4	10		.55
.747	.665	.707	.707	W	W	NW	25	35	25	26.3	N. 77 W.	10	10	3		.35
1.000	.258	.731	.731	N. NW	N	NE	25	12	2	12.7	N. 13 W.	8	3	0		
.640	.802	.702	.702	E. SE	E. SE	SW	2	12	25	8.0	S. 10 W.	9	4	0		
.518	.553	.590	.590	W. NW	N	N	25	25	12	17.0	N. 25 W.	2	2	0		.89
.700		.660	.660	N	N		12	4		5.3	North	3	1			
.816	.620	.728	.728	N. NE	NE	E	2	25	12	12.0	N. 57 E	7	10	7		
.663	.810	.751	.751	SE	NW	S	4	4	12	4.0	South	10	6	0		.19
.779	.731	.739	.739	SW	SW	N	4	35	25	7.3	S. 85 W.	8	7	0		
.850	.723	.744	.744	SW	SW	SW	12	12	4	9.0	S. 55 W.	2	7	1		
.518	.740	.631	.631	SW	SW	S	12	45	4	20.0	S. 42 W	3	3	5		.10
.831	.812	.830	.830	SE	SE	E	4	4	35	13.7	S. 83 E	9	10	10		
.796	.765	.742	.742	S	S	S	45	12	12	23.0	South	3	4	10		.40
.718	.761	.742	.742	S. SW	SW	S	35	4	2	13.7	S. 23 W.	10	10	10		.11
.618	.690	.656	.656	SW	SW	SW	12	35	12	19.7	S. 45 W.	3	0	0		.01
.513	.668	.622	.622	S	S	NE	4	4	4	2.0	S. 29 E	0	0	10		
.618	.681	.684	.684	SW	W	W	4	4	2	3.0	S. 72 W.	10	2	3		.27
.691	.629	.687	.687	S. SW	SW	W	2	4	4	3.0	S. 59 W.	2	8	3		
.595		.653	.653	S	E		2	12		4.3	S. 81 E	7	2			
.673	.799	.739	.739	S. SW	SW	SW	12	25	2	13.0	S. 38 W.	3	7	10		
.819	.822	.795	.795	E	SE	SE	4	2	2	2.3	S. 66 E	9	8	10		.01
.743	.890	.813	.813	SW	N	W	12	12	2	3.7	N. 70 W.	10	9	10		
.747	.619	.872	.746	N	N	N	12	4	4	6.7	North	10	6	10		.94
.577	.612	.756	.648	N	N	SW	4	4	2	2.3	N. 12 W.	2	2	2		
.588	.576	.793	.452	S	NE	S	2	12	2	3.3	N. 63 E	2	2	0		
.712	.702	.714	.707							2.4	S. 68 W.	6.2	5.8	5.1		4.10



Reductions of the monthly meteorological register of the service

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.		Elasticity in inches and decimals.			
					7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.				7 a. m.	2 p. m.	9 p. m.	Mean.
1866.																		
May	1	29.585	29.377	29.320	29.427	33	37	37	38	41	40	39.7	43	24	1.23	1.29	1.29	1.27
	2	30.034	29.507	29.570	29.704	35	36	35	38	41	40	39.7	46	24	1.27	1.37	1.37	1.31
	3	29.620	29.566	29.524	29.590	35	42	39	40	49	42	43.7	48	22	1.20	1.34	1.34	1.26
	4	29.514	29.415	29.506	29.545	36	47	45	42	56	49	49.0	56	22	1.34	1.36	1.36	1.35
	5	29.539	29.570	29.641	29.583	41	52	45	44	52	47	50.0	57	22	1.29	1.39	1.39	1.34
	6	29.714	29.722	29.798	29.745	42	54	42	46	58	52	52.0	60	25	1.35	1.38	1.38	1.37
	7	29.936	30.032	29.915	29.961	37	47	46	41	54	49	48.0	57	25	1.27	1.32	1.32	1.29
	8	29.728	29.700	29.473	29.637	44	54	45	42	52	50	52.0	59	30	1.29	1.37	1.37	1.32
	9	29.408	29.434	29.555	29.466	45	52	49	42	61	53	54.0	61	34	1.24	1.37	1.37	1.29
	10	29.743	29.657	29.648	29.683	42	50	42	54	56	52	54.0	59	33	1.25	1.38	1.38	1.31
	11	29.635	29.634	29.532	29.610	47	47	54	53	65	52	52.7	56	32	1.24	1.37	1.37	1.29
	12	29.655	29.583	29.526	29.588	51	64	60	57	73	62	68.0	75	44	1.25	1.47	1.47	1.38
	13	29.431	29.461	29.629	29.507	49	44	41	51	47	44	47.4	52	32	1.20	1.24	1.24	1.21
	14	29.769	29.771	29.742	29.758	36	43	40	40	51	43	44.7	52	27	1.21	1.23	1.23	1.22
	15	29.614	29.359	29.551	29.548	39	53	42	42	63	47	50.7	67	31	1.23	1.27	1.27	1.24
	16	29.461	29.644	29.627	29.599	43	44	32	47	46	41	44.7	53	36	1.25	1.24	1.24	1.25
	17	29.612	29.610	29.619	29.610	36	42	40	39	55	44	46.0	55	25	1.21	1.24	1.24	1.22
	18	29.545	29.492	29.503	29.513	49	56	50	53	62	54	56.3	62	39	1.25	1.32	1.32	1.29
	19	29.520	29.564	29.530	29.551	42	56	54	55	61	59	58.3	65	37	1.24	1.34	1.34	1.29
	20	29.426	29.362	29.341	29.388	60	65	62	62	74	70	70.7	84	41	1.41	1.47	1.47	1.45
	21	29.497	29.420	29.426	29.494	50	47	41	56	55	45	62.0	69	36	1.22	1.27	1.27	1.24
	22	29.612	29.678	29.676	29.649	32	41	40	43	42	45	45.3	48	30	1.24	1.28	1.28	1.26
	23	29.732	29.741	.....	29.727	37	44	.....	43	51	.....	47.0	.....	.....	1.42	1.47	1.47	1.45
	24	29.272	29.609	29.603	29.671	41	54	45	50	63	54	55.7	62	27	1.12	1.27	1.27	1.20
	25	29.542	29.547	29.433	29.509	47	42	50	52	56	54	51.0	63	40	1.24	1.25	1.25	1.24
	26	29.491	29.425	29.325	29.434	46	50	47	51	57	53	53.7	59	32	1.25	1.27	1.27	1.26
	27	29.209	29.114	29.997	29.107	45	46	46	48	50	49	49.0	52	39	1.20	1.25	1.25	1.22
	28	29.922	29.221	29.243	29.149	42	42	47	51	51	50	50.7	51	36	1.23	1.24	1.24	1.23
	29	29.225	29.330	29.373	29.329	47	51	46	53	55	50	52.7	56	33	1.24	1.27	1.27	1.25
	30	29.491	.....	29.323	29.392	42	.....	50	47	.....	51	50.5	62	33	1.22	.....	1.27	1.25
	31	29.691	29.846	29.822	29.792	44	47	45	47	56	48	51.3	56	35	1.24	1.34	1.34	1.29
Means....		29.585	29.551	29.538	29.552	.....	.....	.....	47.4	55.7	50.0	51.2	.....	.....	2.24	2.70	2.70	2.57
June	1	29.935	29.829	29.753	29.838	43	54	42	49	60	54	54.3	63	32	1.29	1.37	1.37	1.33
	2	29.721	29.621	29.657	29.707	42	52	54	53	66	60	59.7	67	39	1.26	1.37	1.37	1.31
	3	29.590	29.463	29.463	29.505	50	51	51	55	54	54	54.3	55	32	1.27	1.33	1.33	1.30
	4	29.467	29.400	29.552	29.473	55	65	52	60	73	62	65.0	75	42	1.37	1.50	1.50	1.42
	5	29.552	29.531	29.437	29.507	58	62	54	62	66	60	62.7	72	42	1.42	1.47	1.47	1.44
	6	29.476	29.446	29.421	29.448	60	65	55	64	62	61	61.3	73	50	1.45	1.47	1.47	1.46
	7	29.407	29.451	29.542	29.467	55	64	56	60	69	62	63.7	73	42	1.37	1.52	1.52	1.42
	8	29.612	29.606	29.615	29.631	56	62	52	57	62	62	62.3	67	46	1.43	1.47	1.47	1.44
	9	29.652	29.604	29.226	29.714	56	75	67	62	84	71	72.3	84	41	1.42	1.47	1.47	1.44
	10	29.251	29.235	29.243	29.243	63	64	53	69	75	61	68.3	75	40	1.49	1.49	1.49	1.49
	11	29.929	30.031	.....	30.007	49	63	.....	55	69	.....	61.0	.....	.....	1.29	1.45	1.45	1.37
	12	29.936	29.831	29.650	29.806	52	55	49	56	52	55	56.3	72	40	1.33	1.33	1.33	1.33
	13	29.506	29.422	29.590	29.522	60	64	70	64	71	74	69.7	72	44	1.45	1.43	1.43	1.44
	14	29.622	29.417	29.424	29.533	65	74	60	71	79	65	71.7	72	55	1.53	1.72	1.72	1.63
	15	29.421	29.472	29.469	29.476	63	62	52	70	71	63	62.0	74	42	1.42	1.44	1.44	1.43
	16	29.541	29.522	29.522	29.532	59	64	62	66	75	67	69.3	76	45	1.45	1.42	1.42	1.44
	17	29.523	29.503	29.225	29.459	66	60	54	69	63	57	63.0	71	46	1.39	1.47	1.47	1.43
	18	29.153	29.243	29.227	29.222	56	65	56	62	69	60	63.7	69	41	1.29	1.41	1.41	1.37
	19	29.357	29.552	29.660	29.522	52	57	55	56	62	59	59.0	69	42	1.35	1.37	1.37	1.36
	20	29.723	29.775	29.722	29.765	55	70	61	61	79	67	69.0	77	41	1.34	1.51	1.51	1.42
	21	29.799	29.646	29.635	29.690	60	73	65	66	86	72	74.7	86	51	1.42	1.75	1.75	1.59
	22	29.632	29.607	29.612	29.621	66	70	62	71	79	75	75.0	80	60	1.57	1.73	1.73	1.63
	23	29.672	29.633	29.633	29.618	62	70	65	67	82	73	76.0	82	50	1.42	1.59	1.59	1.50
	24	29.733	29.747	.....	29.740	66	72	.....	72	82	.....	77.0	.....	.....	1.52	1.63	1.63	1.58
	25	29.749	29.692	29.751	29.733	75	84	66	81	93	70	81.3	93	52	1.77	1.72	1.72	1.74
	26	29.576	29.650	29.527	29.584	63	74	75	62	72	79	75.0	83	52	1.49	1.72	1.72	1.58
	27	29.503	29.526	29.534	29.521	69	63	63	73	62	65	62.7	69	50	1.65	1.49	1.49	1.57
	28	29.707	29.739	29.757	29.734	52	56	54	56	63	56	52.4	66	49	1.35	1.37	1.37	1.36
	29	29.244	29.900	29.752	29.232	59	55	54	57	62	52	59.0	65	42	1.22	1.34	1.34	1.27
	30	29.269	29.903	29.254	29.275	58	62	64	66	71	62	68.3	71	40	1.37	1.43	1.43	1.41
Means....		29.648	29.627	29.604	29.632	.....	.....	.....	63.3	71.4	64.1	66.4	.....	.....	1.42	1.51	1.51	1.46

e northern and northwestern lakes, at Charlotte, New York.

VAPOR.				WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. Saturation = 1,000.				Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.					
7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.		
537	.653	.732	.641	W	NE	NW	2	45	25	17.0	N. 14 E.	10	10	10		
719	.567	.557	.614	S	NW	NW	12	25	35	17.3	N. 54 W.	7	10	10		.04
557	.505	.744	.602	W. NW.	W. NW.	W	25	25	12	20.3	N. 72 W.	10	10	10		
500	.455	.710	.555	W	NW	N	12	45	12	20.7	N. 45 W.	2	7	10		
756	.592	.847	.732	W. NW.	NW	NW	2	12	4	6.0	N. 47 W.	10	6	1		
691	.756	.727	.725	W	SW	NW	12	12	12	9.7	West	1	2	2		
653	.552	.781	.662	NW	N	S	2	4	2	1.3	N. 21 W.	8	0	0		
704	.756	.646	.702	S	NE	SE	4	25	12	9.0	N. 79 E.	8	10	10		
777	.502	.733	.671	NW	W	SW	25	12	12	13.3	N. 76 W.	10	6	4		.18
613	.627	.727	.656	W	N. NE.	SE	12	12	2	3.7	N. 33 W.	1	1	3		
606	.502	.756	.621	S	N	S	12	4	4	4.0	South	6	3	7		
634	.588	.601	.608	SW	N	S	2	2	12	4.0	S. 9 W.	10	1	4		
859	.772	.756	.796	N. NW	W	W	12	35	45	28.3	N. 82 W.	10	10	10		.35
615	.461	.750	.619	N	N	NW	35	12	12	18.7	N. 9 W.	1	3	4		.50
744	.470	.624	.613	NW	NW	E. NE.	4	4	12	4.0	N. 26 E.	9	9	10		
698	.843	.738	.760	NW	NW	NE.	12	2	2	17.0	N. 37 W.	10	10	10		.11
726	.561	.677	.655	NE	NE	SE	2	12	12	6.3	N. 85 E.	0	5	10		
733	.665	.738	.712	NE	NE	S	2	2	4	1.0	S. 69 E.	10	7	3		
561	.713	.703	.659	N	N	SW	4	12	12	3.7	N. 47 W.	0	4	5		
601	.593	.613	.606	S	E. SE.	W. NW	12	12	45	10.0	N. 89 W.	1	2	10		
627	.502	.684	.604	N. NW	W	NW	12	45	45	30.7	N. 62 W.	6	10	10		.49
587	.494	.607	.563	N	N	NW	35	45	25	31.0	N. 11 W.	10	9	10		.02
511	.525		.518	W	NW		12	12		7.3	N. 69 W.	10	8			
386	.519	.434	.446	SW	SW	SW	12	25	25	20.7	S. 45 W.	2	10	6		
606	.512	.738	.619	SW	W. SW	SW	12	25	25	20.3	S. 54 W.	10	10	0		
653	.577	.606	.612	S	NE	NE	4	12	12	7.3	N. 53 E.	10	5	5		.01
777	.716	.781	.758	E	NE.	NE	35	35	45	36.0	N. 68 E.	10	10	10		
790	.790	.786	.789	SW	NW	W	12	35	4	13.7	N. 67 W.	10	10	3		.50
606	.743	.716	.688	SW	W	SW	4	4	12	6.3	S. 54 W.	7	10	6		.28
624		.728	.681	W		SW	12		12	7.3	S. 67 W.	6		10		.10
772	.455	.777	.668	N. NW	N	SW	25	25	2	16.0	N. 14 W.	9	3	0		.41
.653	.599	.701	.650							7.1	N. 49 W.	6.8	6.5	6.4		2.99
.572	.653	.613	.613	S	S	W	4	2	2	2.3	S. 23 W.	3	4	10		
667	.588	.653	.636	N	S	S	2	2	2	0.7	South	10	3	10		
641	.802	.802	.762	SE.	NE	NE	4	12	12	8.0	N. 53 E.	0	10	10		
708	.629	.772	.703	E	E	N	12	12	12	7.3	N. 63 E.	10	10	10		.10
772	.786	.653	.737	N	NE	NE	12	4	2	5.7	N. 15 E.	10	10	0		.18
720	.843	.659	.761	S	SW	SW	4	2	25	10.0	S. 40 W.	10	4	10		.55
708	.747	.665	.707	W	W	NW	25	35	25	26.3	N. 77 W.	10	10	3		.35
936	1.000	.258	.731	N. NW	N	NE	25	12	2	12.7	N. 13 W.	8	3	0		
665	.610	.802	.702	E. SE	E. SE	SW	2	12	25	8.0	S. 10 W.	9	4	0		
700	.518	.553	.590	W. NW	N	N	25	25	12	17.0	N. 25 W.	2	2	0		.89
620	.700		.660	N	N		12	4		5.3	North	3	1			
747	.816	.620	.728	N. NE.	NE	E	2	25	12	12.0	N. 57 E.	7	10	7		
720	.663	.810	.751	SE	NW	S	4	4	12	4.0	South	10	6	0		.19
708	.779	.731	.739	SW	SW	N	4	35	25	7.3	S. 85 W.	8	7	0		
658	.850	.723	.744	SW	SW	SW	12	12	4	9.0	S. 55 W.	2	7	1		
636	.518	.740	.631	SW	SW	S	12	45	4	20.0	S. 42 W.	3	3	5		.10
846	.831	.812	.830	SE	SE	E	4	4	35	13.7	S. 83 E.	9	10	10		
665	.796	.765	.742	S	S	S	45	12	12	23.0	South	3	4	10		.40
747	.718	.761	.742	S. SW	SW	S	35	4	2	13.7	S. 23 W.	10	10	10		.11
656	.618	.690	.656	SW	SW	SW	12	35	12	19.7	S. 45 W.	3	0	0		.01
685	.513	.668	.622	S	S	NE	4	4	4	2.0	S. 29 E.	0	0	10		
754	.618	.681	.684	SW	W	W	4	4	2	3.0	S. 72 W.	10	2	3		.27
740	.691	.629	.687	S. SW	SW	W	2	4	4	3.0	S. 59 W.	2	8	3		
712	.595		.653	S	E		2	12		4.3	S. 81 E.	7	2			
744	.673	.799	.739	S. SW	SW	SW	12	25	2	13.0	S. 38 W.	3	7	10		
743	.819	.822	.795	E	SE	SE	4	2	2	2.3	S. 66 E.	9	8	10		.01
807	.743	.890	.813	SW	N	W	12	12	2	3.7	N. 70 W.	10	9	10		
747	.619	.872	.746	N	N	N	12	4	4	6.7	North	10	6	10		.94
577	.612	.756	.648	N	N	SW	4	4	2	2.3	N. 12 W.	2	2	2		
588	.576	.793	.452	S	NE	S	2	12	2	3.3	N. 63 E.	2	2	0		
.712	.702	.714	.707							2.4	S. 68 W.	6.2	5.8	5.1		4.10

Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					o	o	o	o	o	o	o	o	o					
July	1	29.693	29.604	29.540	29.612	63	73	66	67	79	72	72.7	80	62	522	730	55	55
	2	29.508	29.565	29.571	29.548	63	62	61	68	70	66	68.0	73	62	522	449	47	50
	3	29.693	29.690	29.648	29.677	61	66	62	66	73	69	69.3	73	62	470	515	42	50
	4	29.680	29.700	29.645	29.675	65	68	63	70	75	70	71.7	75	64	556	521	42	52
	5	29.801	29.811	29.836	29.816	56	61	60	64	71	67	67.3	72	58	343	443	45	42
	6	29.829	29.813	29.576	29.739	54	63	63	58	70	70	66.0	71	54	365	422	42	43
	7	29.550	29.567	29.568	29.562	67	71	66	73	78	74	75.0	79	66	521	664	52	52
	8	29.698	29.668	29.585	29.650	61	68	65	67	74	70	70.3	76	62	457	644	55	55
	9	29.733	29.753	29.753	29.746	58	63	58	64	73	66	66.7	74	60	403	442	37	47
	10	29.834	29.783	29.673	29.763	54	64	61	59	74	68	67.0	75	52	351	462	43	41
	11	29.641	29.575	29.548	29.588	61	66	59	67	74	68	69.7	75	60	457	532	24	45
	12	29.605	29.567	29.543	29.572	60	70	65	67	80	71	72.7	81	59	425	592	55	52
	13	29.584	29.634	29.669	29.629	54	57	56	60	66	63	63.0	69	55	372	319	32	33
	14	29.758	29.753	29.736	29.749	54	58	56	60	68	61	63.0	68	55	372	350	23	37
	15	29.762	29.741	29.721	29.741	53	58	57	59	69	64	64.0	69	52	323	336	35	34
	16	29.706	29.621	29.536	29.623	59	61	60	63	66	64	64.3	66	57	447	470	46	41
	17	29.548	29.525	29.508	29.527	58	64	61	61	71	68	66.7	71	56	443	513	43	42
	18	29.521	29.488	29.471	29.493	60	64	60	66	74	71	70.3	74	60	432	462	37	44
	19	29.541	29.465	29.351	29.452	61	67	65	67	77	69	71.0	77	62	457	527	54	52
	20	29.577	29.588	29.610	29.592	64	67	65	68	74	72	71.3	76	63	543	522	52	55
	21	29.711	29.768	29.748	29.742	64	66	64	68	73	68	69.7	75	65	543	545	54	54
	22	29.845	29.825	29.801	29.824	58	64	62	63	73	69	68.3	75	58	416	476	42	45
	23	29.801	29.760	29.735	29.765	54	67	63	64	76	69	69.7	76	56	385	542	46	41
	24	29.761	29.765	29.745	29.757	61	65	60	66	76	68	70.0	77	61	470	470	41	45
	25	29.668	29.512	29.405	29.528	64	72	68	71	82	74	75.3	84	59	520	650	54	54
	26	29.448	29.453	29.501	29.467	63	65	66	68	71	72	70.3	73	65	532	535	52	54
	27	29.650	29.627	29.575	29.617	66	70	68	71	79	74	74.7	80	65	572	612	54	55
	28	29.608	29.594	29.520	29.574	68	72	69	74	81	77	77.3	82	66	604	621	50	55
	29	29.663	29.685	29.725	29.691	62	67	62	66	74	70	70.0	76	62	502	527	45	52
	30	29.931	29.933	29.948	29.932	55	59	58	59	67	65	63.7	69	55	380	323	32	37
	31	30.026	30.043	29.983	30.017	49	62	58	55	72	65	64.0	74	48	269	422	29	30
Means....		29.691	29.673	29.638	29.667	....	....	....	65.1	73.6	68.8	69.2	....	....	446	513	473	47
August	1	30.043	30.009	30.010	30.021	63	73	68	69	83	76	76.0	84	58	495	677	57	58
	2	30.004	29.961	30.009	29.990	70	74	70	77	85	80	80.7	88	69	622	691	57	66
	3	30.014	29.833	29.817	29.828	74	78	73	80	88	82	83.3	89	73	752	823	67	73
	4	29.807	29.834	29.790	29.830	70	68	70	76	81	76	77.7	82	72	652	510	62	66
	5	29.837	29.791	29.790	29.806	69	72	68	75	85	74	78.0	85	68	628	620	64	64
	6	29.610	29.411	29.340	29.454	69	76	69	76	87	75	79.3	87	65	614	747	62	62
	7	29.385	29.435	29.528	29.449	63	65	62	70	73	70	71.0	75	64	423	510	44	47
	8	29.690	29.699	29.700	29.693	63	67	67	68	77	72	72.3	77	62	525	527	56	54
	9	29.780	29.710	.....	29.745	63	70	....	69	79	....	74.0	....	....	495	612	....	53
	10	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	11	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	12	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	13	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	14	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	15	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	16	29.653	29.670	29.711	29.678	61	66	60	68	76	69	71.0	76	52	443	505	38	41
	17	29.831	29.781	29.736	29.783	54	61	61	59	74	70	77.7	75	55	351	323	46	57
	18	29.801	29.750	29.725	29.759	55	66	62	60	77	71	69.3	78	53	367	492	43	42
	19	29.731	.....	.....	29.731	58	....	....	66	....	....	66.0	....	....	376	....	....	56
	20	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	21	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	22	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	23	.....	.....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....
	24	29.829	29.806	29.791	29.809	51	61	60	56	69	68	64.3	69	51	302	430	41	37
	25	29.904	29.880	29.838	29.874	58	65	62	62	75	70	69.0	75	58	422	483	41	45
	26	29.866	29.755	29.660	29.760	59	68	65	65	78	75	72.7	79	58	420	521	43	44
	27	29.741	29.743	29.736	29.740	60	62	59	66	72	67	68.3	74	60	407	422	33	41
	28	29.862	29.801	29.761	29.808	50	58	59	55	70	65	63.3	71	52	295	323	40	37
	29	29.822	29.828	29.816	29.822	48	63	61	53	73	69	65.0	74	47	269	442	49	41
	30	29.974	29.920	29.883	29.926	52	67	64	58	77	74	69.7	79	51	302	527	46	41
	31	29.880	29.789	29.762	29.810	67	76	71	73	87	81	80.3	88	68	581	775	62	60
Means....		29.815	29.769	29.758	29.722	....	....	....	66.7	76.4	70.3	72.8	....	....	469	550	511	50

thern and northwestern lakes, at Sackett's Harbor, New York.

VAPOR.			WIND.										Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. uration = 1,000.			Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.							
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.	Am't of evaporation, in U. S. inches and decimals.			
.738	.712	.747	E	S	Calm	2	12	0	4.3	S. 12 E.	10	6	10				
.613	.735	.697	SW	SW	W	35	45	35	36.0	S. 58 W.	8	10	8				
.672	.635	.681	W	SW	S	12	12	4	8.0	S. 58 W.	9	8	0				
.681	.658	.697	W	W	W	35	35	12	27.3	West	8	6	2				
.532	.642	.583	NE	SW	SW	12	4	2	2.0	N. 45 E.	0	2	5				
.658	.658	.691	E	S	S	2	2	12	5.0	S. 11 E.	10	10	10				
.693	.634	.681	SW	SW	W	12	25	12	16.0	S. 56 W.	9	3	5		.06		
.720	.751	.720	N	W	S	12	4	2	3.7	N. 22 W.	4	3	0				
.545	.548	.603	N	W	NE	25	12	4	9.7	N. 20 W.	4	2	0				
.551	.647	.634	S	W	Calm	2	4	0	1.5	S. 63 W.	3	6	8				
.634	.557	.627	S	SW	S	4	4	2	3.0	S. 19 W.	8	5	3				
.545	.708	.645	S	W	SW	4	12	25	12.3	S. 54 W.	4	9	10				
.467	.619	.580	W	W	W	45	45	35	41.7	West	9	10	8		.48		
.511	.713	.626	W	SW	SW	4	12	2	5.7	S. 55 W.	5	3	0				
.475	.625	.582	S	W	Calm	2	4	0	1.5	S. 63 W.	9	10	9				
.735	.780	.764	E	NE	NE	2	25	25	17.0	N. 47 E.	10	10	10				
.663	.647	.712	N	SW	W	12	12	4	4.3	N. 74 W.	6	4	3		.46		
.551	.490	.575	SW	SW	SW	25	35	35	31.7	S. 45 W.	4	8	10				
.569	.796	.685	SW	S	NE	12	25	2	11.0	S. 13 W.	4	10	10				
.677	.668	.713	W	SW	W	4	12	4	6.3	S. 63 W.	3	4	3		.30		
.672	.793	.753	W	SW	NE	4	12	2	4.3	S. 58 W.	10	3	5		.08		
.584	.653	.655	NE	NE	W	25	12	4	11.7	N. 40 E.	3	0	0				
.603	.700	.594	S	SW	S	2	12	4	5.1	S. 30 W.	8	4	6				
.524	.601	.620	SW	SW	S	4	12	2	6.0	S. 41 W.	7	6	3				
.595	.720	.687	SE	S	S	2	35	12	16.0	S. 2 W.	8	10	5				
.708	.712	.721	W	W	W	60	45	25	43.3	West	10	7	9		.30		
.614	.720	.697	SW	W	Calm	4	4	0	2.3	S. 72 W.	4	0	0				
.627	.648	.665	SW	SW	Calm	2	12	0	4.7	S. 45 W.	9	7	5				
.677	.613	.692	S	SW	NW	4	25	12	10.0	S. 63 W.	6	7	4		.60		
.595	.631	.662	NE	N	NW	25	4	4	9.7	N. 31 E.	3	0	3				
.539	.631	.597	E	W	Calm	2	4	0	0.7	West	0	0	0				
1	.613	.667	.664						7.4	S. 69 W.	5.9	5.6	4.9		2.28		
0	.700	.644	.681	S	W	S	12	4	2	5.0	S. 18 W.	4	5	0			
9	.574	.585	.616	S	W	S	4	12	2	4.7	S. 62 W.	3	5	0			
1	.622	.632	.665	S	SW	S	4	4	4	3.7	S. 14 W.	0	5	3			
7	.483	.727	.646	S	SW	S	12	2	4	6.0	S. 6 W.	9	10	10		.10	
4	.507	.720	.650	E	SW	Calm	2	4	0	1.0	S. 15 W.	3	4	2			
5	.584	.724	.664	E	S	SW	2	25	25	15.0	S. 20 W.	4	8	6			
8	.629	.613	.633	W	W	W	40	45	35	46.7	West	10	9	3		.46	
3	.569	.758	.690	W	SW	W	4	12	2	5.7	S. 60 W.	2	4	6			
0	.618		.659	S	SW		2	12		4.7	S. 39 W.	5	3				
17	.563	.564	.591	NE	N	N	25	25	25	23.3	N. 15 E.	6	5	0			
13	.433	.570	.569	NE	NE	NE	12	25	2	13.0	N. 45 E.	0	0	0			
38	.531	.576	.605	Calm	W	Calm	0	4	0	1.3	West	0	2	0			
38			.588	SE			2			2.0	S. 45 E.	0					
87	.607	.601	.632	N	W	W	12	35	25	20.7	N. 78 W.	2	4	0			
72	.558	.613	.648	S	W	S	2	25	4	12.0	S. 80 W.	4	0	0			
80	.574	.558	.604	S	SW	SW	12	25	35	23.0	S. 38 W.	2	5	7			
85	.539	.595	.606	N	W	NE	12	25	25	10.0	N. 14 W.	0	9	5			
81	.441	.680	.601	NE	W	W	2	4	4	2.2	N. 77 W.	8	9	0			
67	.545	.607	.606	S	W	Calm	4	12	0	4.3	S. 71 W.	0	4	0			
41	.569	.551	.587	SE	W	E	2	4	2	0.5	S. 24 W.	6	5	0			
716	.644	.590	.650	S	SW	S	2	12	2	5.0	S. 34 W.	0	4	5			
392	.564	.521	.628							5.2	S 80 W.	3.2	3.0	2.4		.56	

*Reductions of the monthly meteorological register of the survey*

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.	
1865.					o	o	o	o	o	o	o	o	o	o				
Nov.	1	30.054		29.906	29.980	34		39	36		44	40.0	48	31	170		173	172
	2	29.658	29.661	29.726	29.682	48	49	45	52	53	51	53.0	54	32	282	282	282	282
	3	29.890	29.733	29.604	29.742	37	44	39	40	52	47	46.3	53	33	181	183	134	151
	4																	
	5																	
	6																	
	7																	
	8																	
	9																	
	10																	
	11																	
	12																	
	13																	
	14																	
	15																	
	16	29.718	29.707	29.582	29.669	44	56	53	48	64	60	57.3	64	39	236	343	310	256
	17	29.479	29.444	29.623	29.515	53	56	45	62	62	49	57.7	64	45	284	369	247	257
	18	29.808	29.848	29.816	29.824	38	40	38	42	44	44	43.3	48	38	177	195	151	174
	19	29.877	29.912	29.960	29.916	36	38	33	39	42	37	39.3	44	33	173	177	136	162
	20	30.018	29.950	29.857	29.908	28	39	38	39	42	43	38.3	44	28	130	199	164	164
	21	29.770	29.590	29.392	29.584	37	36	34	41	39	38	39.3	43	34	168	173	144	162
	22	29.168	29.122	29.105	29.132	33	35	34	36	37	37	36.7	38	32	149	178	157	162
	23	29.352	29.472	29.582	29.469	34	36	37	37	38	40	38.3	40	32	157	186	181	175
	24	29.775	29.827	29.810	29.804	37	38	37	39	42	41	40.7	42	34	194	177	162	174
	25	29.812	29.750	29.700	29.754	35	39	37	38	41	41	40.0	41	35	165	212	166	192
	26	29.800	29.759	29.704	29.754	36	40	39	40	45	43	42.7	45	36	160	186	186	177
	27	29.630	29.510	29.725	29.622	36	37	29	40	40	31	37.0	42	29	160	181	137	159
	28	29.885	29.940	29.911	29.912	24	26	22	27	30	26	27.7	33	21	995	995	672	993
	29	29.871	29.780	29.708	29.786	21	33	28	23	38	31	30.7	38	17	990	123	119	111
	30	29.595	29.350	29.094	29.346	30	38	39	32	44	46	40.7	47	26	144	151	147	147
Means....		29.620	29.668	29.656	29.655	.....	.....	.....	39.0	44.3	41.6	41.6	.....	.....	173	200	168	173
Dec.	1	29.130	29.200	29.370	29.233	37	36	36	40	40	41	40.3	44	34	181	160	147	163
	2	29.565	29.470	29.440	29.492	33.5	35	39	36	41	46	41.0	46	32	159	126	147	144
	3	29.750	29.846	29.727	29.774	37	38	36	40.5	42	40	40.8	45	35	175	177	160	174
	4	29.671	29.583	29.806	29.687	41	53	40.5	45	58	45	49.3	58	36	205	336	193	245
	5	30.084	30.056	30.003	30.031	29	28	33	31	34	38	34.3	45	24	137	95	123	115
	6	29.944	29.826	29.678	29.816	35	38	33	37	43	36.5	38.8	43	32	178	164	143	162
	7	29.398	29.342	29.670	29.470	32	36	24	36	41	27	34.7	41	24	129	147	95	124
	8	29.951	29.984	30.018	29.994	15	22	24.5	18	25	28	23.7	28	13	952	984	982	973
	9	30.057	29.811	29.605	29.824	21	30	31	23	34	35	30.7	35	18	990	121	124	113
	10	29.608	29.628	29.609	29.615	31	29	32.5	29	32	37	32.7	37	24	.....	126	125	129
	11	29.715	29.754	29.730	29.733	35	39	36	40	45	42.5	42.5	45	33	139	162	127	142
	12	29.639	29.571	29.536	29.582	44	47	51	49	54	55	52.7	55	38	223	231	221	228
	13	29.986	30.009	29.965	29.987	31	32	28	34	35	32	33.7	53	28	139	142	127	134
	14	29.928	29.831	29.841	29.867	25.5	24	17	28	27	21	25.3	32	14	109	9.5	64	64
	15	29.915	29.922	29.928	29.922	14	15	16	18	19	19	18.7	19	11	937	940	956	944
	16	30.016	29.991	29.939	29.982	01	13	12	03	16	15	11.3	18	3	923	944	941	936
	17	29.908	29.901	29.694	29.924	13.5	26	17	16	31	21	22.7	31	9	952	983	949	951
	18	30.018	29.971	29.752	29.914	22	27	28	24	30	32	28.7	32	13	995	113	102	106
	19	29.348	29.227	29.320	29.298	38	40	35	40	44	40	41.3	44	27	203	185	122	174
	20	29.801	29.779	29.520	29.733	17	17.5	17	21	22	21	21.3	40	10	949	945	949	947
	21	29.192	29.552	29.828	29.524	11	15	14	14	18	18	16.7	28	6	957	952	937	948
	22	29.791	29.727	29.995	29.838	10	20	15	12	23	20	18.3	23	2	946	974	925	958
	23	30.191	30.178	30.130	30.166	06.5	20	17	10	23	20	17.7	26	3	919	974	960	951
	24	29.579	29.396	29.304	29.426	23	29	34	27	32	38	32.3	38	14	978	126	144	116
	25	29.375	29.450	29.620	29.482	36.5	37	36	40	42	40	40.7	42	34	170	155	160	160
	26	29.670	29.548	29.491	29.570	31	33	44	32	38	47	39.0	47	26	162	123	249	124
	27	29.250	29.520	29.822	29.531	36	35	33	39	38	36	37.7	46	32	173	165	149	162
	28	29.882	29.693	29.761	29.779	30	31	28	32	34	31	32.3	36	27	144	139	119	134
	29	29.958	30.120	30.198	30.092	30	34.5	13	33	38	16	29.0	38	14	132	154	944	110
	30	30.148	29.956	29.995	30.033	10	15.5	14	12	18	16	15.3	19	5	946	952	939	955
	31	30.110	29.938	29.886	29.978	13	32	32	15	37	34	28.7	37	11	956	116	135	109
Means....		29.760	29.735	29.757	29.751	.....	.....	.....	28.2	34.0	31.9	31.4	.....	.....	115	126	119	125

NOTE.—The observations were omitted from the 3d to the 16th on account of the sickness of the observer. lowest, 20°.



thern and northwestern lakes, at Sackett's Harbor, New York.

VAPOR.			WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. uration = 1,000.			Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.						
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.			
	.597	.699	Calm		S.	0		4	2.0	South	3		5			
.674	.590	.684	S.	S.	W.	35	25	45	25.3	S. 37 W.	10	10	8			
.472	.413	.539	S.	S.	S.	2	12	25	13.0	South	2	5	10		.12	
.575	.599	.626	S.	SW.	S.	2	4	25	10.0	S. 5 W.	6	7	0			
.665	.710	.629	S.	SW.	W.	25	35	12	20.3	S. 36 W.	3	9	0			
.677	.522	.620	NE.	NE.	NE.	12	4	4	6.7	N. 45 E.	10	10	10			
.661	.619	.689	NE.	NE.	NE.	4	12	4	6.7	N. 45 E.	10	10	7			
.744	.587	.704	NE.	SW.	S.	2	2	2	0.7	South	8	10	10		.04	
.726	.628	.669	NE.	NE.	NE.	12	25	45	27.3	N. 45 E.	10	10	10			
.807	.712	.741	N.	NW.	S.	4	4	2	1.9	N. 30 W.	10	10	10		.60	
.811	.732	.752	NE.	NE.	NE.	12	2	12	8.7	N. 45 E.	10	10	10		.30	
.661	.653	.710	NE.	NE.	N.	4	12	2	6.0	N. 41 E.	10	10	10			
.824	.653	.732	NW	Calm	N.	4	0	2	1.9	N. 30 W.	10	10	10			
.607	.669	.640	NW	W.	W.	4	4	12	6.3	N. 82 W.	10	3	4			
.732	.788	.722	NW	SW.	NW	2	4	35	12.3	N. 51 W.	8	9	10			
.596	.515	.585	N.	NW	S.	25	2	2	8.3	N. 4 W.	2	4	6		.42	
.537	.685	.651	NE.	S.	S.	4	2	12	3.9	S. 14 E.	10	7	8			
.522	.471	.596	S.	S.	S.	4	12	35	17.0	South	6	10	10			
6	.670	.619	.664						1.3	S. 17 W.	7.7	8.4	6.9		2.26	
2	.645	.567	.648	W.	W.	W.	45	45	45	45.0	West	10	9	10		.28
3	.488	.471	.571	S.	S.	S.	12	4	25	13.7	South	10	10	10		.14
2	.661	.645	.666	NE.	NE.	NE.	4	12	12	9.3	N. 45 E.	10	10	10		
4	.698	.645	.676	S.	S.	S.	25	25	35	28.3	South	10	10	10		
18	.432	.537	.586	N.	NW	NW	25	12	25	19.3	N. 27 W.	6	5	6		.30
17	.587	.661	.685	NW	W.	SW.	4	4	12	5.3	S. 70 W.	10	5	2		
5	.567	.644	.607	SE	SW.	N.	2	4	35	10.3	N. 3 W.	10	10	10		
5	.622	.593	.580	NW	NW	NW	12	25	4	13.7	N. 45 W.	0	10	10		
10	.617	.628	.658	NE.	NE.	S.	4	2	12	3.0	S. 31 E.	10	9	10		
	.694	.572	.633	NW	SW.	S.	2	2	2	1.3	S. 81 W.	10	10	10		.04
57	.533	.466	.519	S.	S.	S.	12	4	12	9.3	South	9	8	2		
38	.552	.743	.644	S.	S.	S.	12	35	35	24.0	South	10	6	10		
12	.698	.594	.665	W.	W.	NW	45	35	12	29.3	N. 85 W.	8	9	0		.12
11	.644	.431	.595	NW	SW.	W.	4	45	45	28.3	S. 70 W.	10	10	9		
71	.392	.541	.435	NW	NW	N.	25	12	4	13.0	N. 41 W.	0	2	0		.08
60	.492	.475	.476	NE.	NE.	NE.	4	4	12	6.7	N. 45 E.	4	6	5		
75	.480	.431	.495	E.	S.	SE.	2	2	2	1.9	S. 45 E.	3	2	0		
38	.675	.594	.669	Calm	NE.	NE.	0	2	2	1.3	N. 45 E.	10	10	10		
20	.677	.557	.685	S.	SW.	W.	25	45	60	36.0	S. 58 W.	10	10	10		.10
31	.382	.431	.415	NW	NE.	NE.	12	4	12	6.7	N. 8 E.	5	10	10		
57	.525	.371	.451	NE.	NW	NW	4	35	45	26.7	N. 42 W.	10	8	5		
10	.596	.269	.492	NE.	NW	NW	4	35	45	26.7	N. 42 W.	10	8	5		
57	.598	.556	.476	SE	W.	W.	2	12	2	4.3	S. 84 W.	9	3	0		.16
29	.694	.628	.617	S.	S.	SW.	45	35	4	27.7	S. 2 W.	10	10	7		
188	.577	.645	.637	SW.	SW.	SW.	12	25	2	13.0	S. 45 W.	5	9	1		.06
196	.537	.772	.735	E.	Calm	S.	2	0	2	1.0	S. 45 E.	4	10	10		
126	.719	.705	.717	Calm	SW.	NW	0	4	2	1.7	S. 74 W.	10	10	10		.50
194	.712	.685	.730	E.	NE.	NW	4	2	2	1.7	S. 56 E.	10	10	10		.32
103	.673	.492	.623	W. by N	W.	NE.	12	25	12	10.3	N. 69 W.	8	4	2		.06
110	.603	.659	.624	NE.	NE.	NE.	4	25	4	11.0	N. 45 E.	10	10	10		
348	.527	.792	.656	Calm	S.	S.	0	4	25	9.7	South	0	3	3		.02
642	.590	.574	.602						6.7	S. 79 W.	7.8	7.7	6.2		2.30	

The amount of rain and snow during that time was 0.78. The highest range of thermometer was 56°; the



Reductions of the monthly meteorological register of the service.

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.				
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in inches and decimals.					
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.			
1866.																			
Jan. 1	29.788	29.725	29.830	29.781	32.5	35	32	36	40	34	36.6	40	30	.139	.139	.151			
2	30.076	29.993	29.911	29.993	23	23	21	25	28	25	26.0	34	19	.110	.086	.073			
3	29.777	29.668	29.611	29.685	22	31	30.5	24	34	34	30.6	35	14	.095	.139	.136			
4	29.543	29.568	29.840	29.650	28	19	-2	30	22	-0	17.3	32	-2	.150	.062	.017			
5	29.990	29.890	29.897	29.928	-16.5	-7	-2	-14	-5	-0	-6.3	-0	-26		.009	.017			
6	30.181	30.221	30.226	30.209	-13	-7	-8.5	-10	-7	-6	-6.7	3	-19						
7	30.572	30.678	30.803	30.684	-18	-12	-14	-16	-10	-12	-12.7	-2	-25						
8	30.949		30.818	30.883	-19.5		-10	-17		-8.5	-12.7	-6	-25			.012			
9	30.723	30.601	30.485	30.603	-12.5	10	-0	-10	14	2.5	12.2	-14	-19		.022	.030			
10	30.269	30.068	29.826	30.054	-2.5	22	22	-1	26	26	17.0	26	-10		.072	.071			
11	29.766	29.761	29.791	29.773	31	31	29	33	34.5	32	33.2	35	21	.151		.126			
12	29.801	29.626	29.439	29.622	25	28	27	28	31	30	29.7	32	23	.100	.119	.113			
13	29.303	29.343	29.564	29.403	30	28	14	32	30	17	26.3	34	13	.144	.130	.048			
14	29.994	30.116	30.247	30.119	-7.5	-6.5	-9	-6	-5	-7	-6.0	15	-15	.016	.015	.006			
15	30.362	30.238	29.861	30.154	-17	-3	-6	-16	-1	-4	-7.0	-1	-23	.002	.015	.040			
16	29.383	29.339	29.461	29.394	26	29	25	29	32	28	29.7	32	-10	.106	.126	.104			
17	29.627	29.556	29.413	29.532	24.5	27	30	27	31	33	30.3	33	23	.103	.101	.134			
18	29.559	29.520	29.633	29.571	27	33	24	29	38	27	31.3	38	24	.124	.123	.054			
19	29.569	29.601	29.608	29.593	27.5	31	32	30	33	35	32.6	35	21	.121	.151	.143			
20	29.273	29.437	29.699	29.470	50	31	16	58	35	19	37.3	58	15	.255	.188	.052			
21	29.763	29.730	29.673	29.722	13	12	15	15	15	18	16.0	18	7	.056	.041	.052			
22	29.705	29.735	29.835	29.758	15	18.5	19	17	21	22	20.0	22	11	.063	.072	.069			
23	29.972	29.992	30.005	29.990	18	17.4	19	20	22	21	21.0	22	14	.076	.045	.080			
24	30.120	30.137	30.000	30.086	15	20	14	17	23	16	18.7	23	10	.063	.074	.039			
25	29.660	29.532	29.497	29.563	16.5	18	20	19	21	23	21.0	23	11	.063	.063	.074			
26	29.620	29.679	29.727	29.675	14	17	13	16	19.5	16	17.2	22	11	.059	.066	.044			
27	29.886	29.905	29.890	29.894	6	21.4	8	11	24	10	15.0	24	4	.028	.086	.040			
28	29.856	29.823	29.750	29.810	-7	15	19.5	-5	18	23	12.0	23	-14	.009	.052	.065			
29	29.780		29.747	29.764	17		17.5	20		20	20.0	23	13	.060		.081			
30	29.592	29.382	29.323	29.432	22	33	33	25	38	37	33.3	38	15	.084	.123	.136			
31	29.471	29.341	29.266	29.359	21	29	26.5	23	32	29	28.0	36	17	.090	.126	.115			
Means...	29.869	29.800	29.828	29.844	.....	.....	.....	15.1	23.4	17.8	19.4	.....	.....	.089	.064	.062			
Feb. 1	29.174	29.161	29.280	29.205	23	18	14	25	22	16	21.0	29	13	.100	.053	.059			
2	29.380	29.367	29.352	29.366	-2.5	16	13	-0	19.5	16	11.8	21	-7	.012	.050	.044			
3	29.440	29.424	29.422	29.423	10	15.5	14	12	19	17	16.0	20	4	.046	.048	.048			
4	29.585	29.572	29.833	29.663	1	12.5	3.5	4	16	6	8.7	17	-3	.012	.037	.023			
5	30.168	30.158	30.060	30.129	.....	9	9	.....	12	12	4.3	13	-20	.....	.031	.031			
6	30.093	30.087	30.378	30.186	14.5	9	-9	17	12	-7	7.3	18	-12	.055	.031	.006			
7	30.204	30.167	29.909	30.093	-2	21	25.5	-0	25	30	18.0	30	-15	.039	.079	.006			
8	29.824	29.881	29.760	29.842	26	19	16	30	22	19	23.7	30	14	.095	.069	.056			
9	29.765	29.744	29.647	29.719	15	23	23	18	27	26	20.3	27	13	.052	.072	.029			
10	29.593	29.585	29.655	29.611	33	35	35	38	40	32	38.7	40	23	.123	.139	.165			
11	29.572	29.575	29.745	29.633	35	.....	29	37	.....	32	36.0	39	28	.178	.....	.156			
12	29.931	29.934	29.744	29.869	20	21	24	22	24	27	24.3	30	16	.085	.079	.086			
13	29.859	29.838	29.886	29.861	23.5	30	25	26	32	28	28.7	32	20	.097	.144	.100			
14	29.626	29.610	29.443	29.493	28	34.5	33	31	39	36	35.3	39	23	.119	.124	.142			
15	29.413	29.429	29.817	29.553	14	5	-0	17	7	2	8.7	34	-2	.042	.032	.021			
16	30.215	30.210	30.163	30.196	-9	6	4	-7	9	7	3.0	9	-15	.006	.023	.012			
17	30.173	30.152	29.967	30.097	12	23	26	15	27	30	24.0	30	-0	.041	.072	.095			
18	29.977	29.950	29.583	29.837	25.5	33	34	29	38	37	34.7	39	24	.092	.123	.157			
19	29.270	29.360	29.243	29.291	35	36	32	37	39	35	37.0	39	32	.172	.173	.142			
20	29.646	29.643	29.796	29.695	40.5	24.5	23	23	28	26	25.7	31	18	.081	.092	.029			
21	30.154	30.131	30.053	30.113	12	29	34	14	32	38	28.0	38	9	.052	.126	.144			
22	29.950	29.934	29.574	29.819	39	44	41	43	50	48	47.0	51	38	.186	.209	.166			
23																			
24																			
25																			
26																			
27	30.137	30.121	30.144	30.134	21.5	28	22	24	30	26	26.7	31	8	.026	.130	.072			
28	30.207	30.185	30.018	30.137	19	33	29	22	35	32	29.7	36	14	.062	.162	.126			
Means...	29.809	29.801	29.762	29.790	.....	.....	.....	19.1	26.8	24.0	23.3	.....	.....	.082	.094	.082			

kern and northwestern lakes, at Sackett's Harbor, New York.

VAPOR.			WIND.								Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.	
Humidity. ration = 1,000.			Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.						
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.			
.557	.792	.669	S.....	SW...	W.....	25	25	12	17.3	S. 35 W.	10	5	4			
.433	.610	.596	N.....	E.....	S.....	4	4	2	1.7	N. 67 E.	8	9	6			
.712	.664	.705	S.....	S.....	W.....	4	12	12	6.7	S. 37 W.	0	6	10			
.584	.393	.586	W.....	N.....	NE.....	4	12	4	5.0	N. 5 W.	10	10	0			
.257	.393	.325	NE.....	NE.....	E.....	4	12	2	6.0	N. 49 E.	10	10	10		.10	
			NE.....	NE.....	NE.....	4	4	12	6.7	N. 45 E.	3	10	10			
			NE.....	NE.....	NE.....	4	12	4	6.7	N. 45 E.	0	0	0			
	.395	.395	NE.....		Calm	2		0	0.7	N. 45 E.	0		0			
.280	.376	.297	Calm	Calm	Calm	0	0	0			1	0	0			
.515	.515	.515	Calm	S.....	S.....	0	4	2	2.0	South...	9	10	10			
	.694	.747	W.....	W.....	Calm	4	2	0	2.0	West...	10	10	10			
.685	.675	.672	NE.....	NE.....	NE.....	4	2	4	3.3	N. 45 E.	10	10	10			
.782	.509	.695	NE.....	NW...	N.....	2	2	12	3.9	North...	10	10	10		.8	
.442	.191	.358	N.....	N.....	Calm	4	2	0	2.0	North...	0	1	0		.14	
.369	.284	.349	Calm	NE.....	NE.....	0	2	12	47.0	N. 45 E.	0	3	10			
.694	.655	.671	S.....	S.....	SW...	35	35	15	35.3	S. 17 W.	10	10	10		.04	
.582	.703	.663	SW...	S.....	W.....	12	12	4	8.0	S. 31 W.	10	8	10		.6	
.537	.644	.652	S.....	S.....	Calm	2	4	0	2.0	South...	10	10	0			
.800	.698	.742	NE.....	NE.....	NE.....	2	4	2	2.7	N. 45 E.	10	10	10			
.628	.541	.566	S.....	W.....	W.....	45	60	45	38.3	S. 67 W.	9	10	7		.6	
.415	.525	.549	W.....	W.....	SW...	45	35	25	33.0	S. 80 W.	8	6	10		.14	
.641	.584	.632	W.....	SW...	SW...	35	35	12	25.3	S. 64 W.	8	6	4		.30	
.382	.712	.599	SE.....	S.....	Calm	2	2	0	1.3	S. 19 E.	10	10	8			
.598	.659	.643	NE.....	NE.....	NE.....	2	2	4	2.7	N. 45 E.	3	5	8			
.570	.598	.595	NE.....	NE.....	Calm	12	12	0	8.0	N. 45 E.	10	10	10		.10	
.623	.492	.591	Calm	Calm	Calm	0	0	0			8	10	3		.14	
.674	.582	.551	Calm	NW...	Calm	0	2	0	0.7	N. 45 W.	10	4	8			
.525	.532	.438	Calm	E.....	Calm	0	2	0	0.7	East....	0	9	10			
.629	.592	.592	NE.....		NE.....	2		4	2.0	N. 45 E.	10		10			
.537	.619	.593	Calm	S.....	SW...	0	12	25	11.3	S. 31 W.	10	10	10			
.694	.720	.715	SW...	SW...	W.....	2	35	25	19.3	S. 63 W.	8	6	9		.10	
.564	.563	.577							3.9	S. 58 W.	6.9	3.8	7.0		1.26	
16	.449	.659	.651	W.....	W.....	W.....	25	25	2	17.3	West...	10	9	7		.04
72	.475	.492	.413	Calm	Calm	Calm	0	0	0	0	Calm...	8	5	7		
10	.466	.509	.528		S.....	NW...	0	2	4	1.0	N. 75 W.	10	9	6		
23	.410	.400	.344	W.....	W.....	NW...	2	2	12	5.0	N. 56 W.	9	8	0		
	.418	.418	.418	Calm	S.....	S.....	0	2	25	9.0	South...	0	6	10		
89	.418	.191	.399	W.....	NE.....	NE.....	45	12	4	11.7	N. 71 W.	5	0	0		
93	.610	.517	.507	NE.....	S.....	S.....	2	12	12	7.7	S. 4 E...	10	9	10		
69	.584	.541	.565	E.....	NE.....	NE.....	2	12	12	8.7	N. 49 E.	9	10	10		
25	.529	.634	.563	NE.....	SW...	E.....	2	2	2	0.7	East....	10	9	10		.06
37	.557	.719	.604	S.....	S.....	S.....	25	25	2	17.3	South...	10	10	10		
107		.694	.751	E.....	N.....	N.....	2	2	12	5.0	N. 8 E...	10	10	10		.20
721	.610	.644	.658	NE.....	NE.....	NE.....	25	25	35	28.3	N. 45 E.	10	10	10		.56
394	.794	.655	.714	NW...	Calm	Calm	2	0	0	0.7	N. 45 W.	10	10	10		.04
385	.636	.705	.675	SE.....	S.....	S.....	4	45	25	24.0	S. 2 E...	10	10	10		
509	.538	.438	.495	W.....	NW...	NW...	35	35	25	29.3	N. 61 W.	8	6	3		.34
191	.356	.308	.285	Calm	S.....	S.....	0	4	35	13.0	South...	0	6	3		
475	.529	.569	.524	S.....	S.....	S.....	25	25	35	28.3	South...	5	2	0		
611	.537	.712	.620	S.....	S.....	S.....	12	25	4	13.3	South...	2	10	10		
807	.726	.698	.744	SW...	SW...	SW...	2	2	25	9.7	S. 45 W.	10	10	10		.28
663	.599	.634	.622	W.....	SW...	NW...	2	25	12	10.0	S. 72 W.	10	7	8		
635	.694	.628	.652	Calm	S.....	S.....	0	4	25	9.7	South...	8	6	7		.06
609	.581	.494	.581	S.....	S.....	S.....	35	35	35	35.0	South...	3	4	6		
																1.12
674	.782	.515	.657	E.....	NE.....	N.....	2	2	2	1.7	S. 45 E.	10	10	5		
.584	.797	.694	.692	NE.....	NE.....	NE.....	2	2	4	2.7	S. 45 E.	6	5	5		
.573	.603	.565	.567							5.0	S. 22 W.	7.6	7.5	6.5		2.70

Reductions of the monthly meteorological register of the army

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.			
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.				
														7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.
1866.					°	°	°	°	°	°	°	°	°					
March	1	29.940	29.861	29.849	29.883	36	40	38	40	45	42	42.0	45	27	160	189	177.5	
	2	29.862	29.751	29.749	29.787	33	38.5	35	38	42	39	39.7	44	34	123	229	152.5	
	3	29.712	29.720	29.664	29.699	42	42	34	46	48	38	44.0	49	34	215	189	146.5	
	4	29.723	29.675	29.719	29.306	25	24	19	28	27	21	25.3	34	18	100	100	082.5	
	5	29.805	29.771	29.739	29.772	14	21	21	17	25	24	22.0	27	11	048	044	032.5	
	6	29.889	29.874	29.779	29.847	14.5	22	20	17	26	24	22.3	27	12	055	072	062.5	
	7	29.679	29.644	29.642	29.655	15	21	17	19	25	20	21.3	25	12	040	079	062.5	
	8	29.752	29.781	29.769	29.764	12.5	18	20	15	22	23.5	20.2	26	9	048	053	062.5	
	9	29.750	29.679	29.742	29.724	12.5	20	15	15	23	18	18.7	24	9	048	074	052.5	
	10	29.992	29.981	29.924	29.966	9	24	24.5	11	29	28	22.7	29	5	043	072	082.5	
	11	29.558	29.468	29.525	29.514	30	35	38	35	38	41	38.0	41	23	109	165	196.5	
	12	29.752	29.730	29.575	29.786	32	33	30.5	35	36	33	34.7	40	29	142	149	141.5	
	13	30.028	30.065	30.095	30.063	31	32	32	33	35	35	34.3	35	29	151	142	155.5	
	14	29.882	29.845	29.752	29.826	33	38	52	36	40	55	43.7	55	31	149	203	312.5	
	15	29.731	29.704	29.535	29.657	35	36	34	38	38	26	37.3	53	33	165	186	170.5	
	16	29.498	29.432	29.355	29.429	34	35	32	36	38	35	36.3	38	32	170	165	148.5	
	17	29.408	29.500	29.662	29.523	21	27.5	7	23	20	9	17.3	34	5	064	070	037.5	
	18	29.772	29.611	29.482	29.622	7	18	20	10	21	23	18.0	32	2	026	065	074.5	
	19	29.753	29.771	29.767	29.764	13	20	16	16	24	19	19.7	24	10	044	082	056.5	
	20	29.918	29.844	29.692	29.818	13	21	19	16	26.5	22	21.5	27	8	044	051	082.5	
	21	29.201	29.269	29.564	29.348	30	29.5	23	32	32	26	30.0	32	18	144	131	089.5	
	22	29.909	29.961	29.986	29.952	21	26.5	26	24	30	29	31.0	32	18	079	104	106.5	
	23	29.796	29.535	29.498	29.610	28	35	36	30	42	40	37.3	43	22	130	113	160.5	
	24	29.605	29.563	29.465	29.544	29.5	32	29	32	35	32	33.0	39	28	134	142	186.5	
	25	29.406	29.441	29.455	29.434	17.5	16	12.5	20	19	15	18.0	31	9	068	056	043.5	
	26	29.617	29.723	29.883	29.744	15	24	25	19	29	28	25.3	30	8	040	072	102.5	
	27	30.061	29.054	30.091	29.735	17	27	26	21	31	29	27.0	32	14	049	101	106.5	
	28	30.098	29.840	29.640	30.193	23	33	34	25	39	37.5	33.8	39	18	100	110	150.5	
	29	29.530	29.485	29.510	29.508	33	33.5	32	37	38	35	36.7	39	32	136	133	142.5	
	30	29.591	29.560	29.538	29.563	25	31	28	29	35	31	31.7	35	23	089	122	119.5	
	31	29.511	29.335	29.252	29.433	32	36	37.5	33	41	41	38.3	41	25	168	147	179.5	
Means....		29.733	29.660	29.684	29.705	.....	.....	.....	26.6	32.2	30.3	29.7	.....	.....	099	116	112.5	
April	1	29.558	29.727	29.864	29.716	34	35	33	37	39	37	34.3	41	33	157	152	136.5	
	2	29.852	29.966	29.944	29.921	32	39	32	34	43	35	37.4	43	29	155	186	142.5	
	3	29.979	29.920	29.736	29.878	30	40	39	31	47	43	40.3	50	24	155	156	186.5	
	4	29.811	29.770	29.690	29.757	39	53	47	43	59	53	51.7	62	37	186	323	244.5	
	5	29.660	29.698	29.657	29.672	53	61	44	61	72	50	61.0	78	43	297	390	309.5	
	6	29.838	29.850	29.844	29.844	37	38	35	41.5	42	38	40.5	49	34	162	177	165.5	
	7	29.944	29.889	29.854	29.896	29	33	32	32	37	35	34.7	37	28	126	136	142.5	
	8	29.854	29.846	29.872	29.857	29	33	32	31	40	36	35.7	41	27	137	097	129.5	
	9	29.054	29.948	30.026	29.676	25	36	31	28	43	36	35.7	43	23	100	121	116.5	
	10	30.049	29.930	29.808	29.929	28	45	44	30	54	50	44.7	54	22	130	181	309.5	
	11	29.854	29.799	29.793	29.815	38	51	40	43	60	46	49.7	60	38	164	255	189.5	
	12	29.838	29.710	29.507	29.685	36.5	56	56	42	68	63	57.7	69	37	144	290	356.5	
	13	29.756	29.914	29.980	29.883	40	42	36	44	47	41	44.0	62	37	195	202	147.5	
	14	29.931	29.689	29.601	29.740	33	49	46	37	59	50	48.7	59	32	136	216	252.5	
	15	29.835	29.890	29.908	29.878	35	42	35	39	47	39	41.7	50	34	152	202	154.5	
	16	29.976	29.971	29.982	29.976	34	45	43.5	38	53	50	47.0	53	32	144	191	196.5	
	17	30.153	30.108	30.051	30.104	36	54	54	41	65	60	55.3	65	37	147	272	338.5	
	18	30.084	29.969	29.865	29.973	47	61	58	54	71	66	63.7	73	48	231	403	376.5	
	19	29.857	29.867	29.848	29.857	56	53	52	62	59	56	59.0	65	53	369	323	335.5	
	20	29.726	29.631	29.501	29.619	51	64	61	55	71	67	64.3	72	51	321	503	457.5	
	21	29.454	29.333	29.297	29.361	58	61	47	61	70	54	61.7	70	49	443	416	391.5	
	22	29.397	29.364	29.412	29.391	43.5	52	45	48	59	52	53.0	62	42	224	296	307.5	
	23	29.363	28.982	28.767	29.037	42	47	45	46	51	48	48.3	52	38	215	270	260.5	
	24	28.777	28.907	29.052	28.912	37	38	38	40	41	42	41.0	42	35	181	190	177.5	
	25	29.107	29.197	29.305	29.203	34	39	35	38	43	38	39.7	43	34	144	186	165.5	
	26	29.402	29.472	29.505	29.460	33	37	40	36	42	45	41.0	45	31	149	155	182.5	
	27	29.714	29.706	29.666	29.695	36	41	38	41	48	41	43.3	48	33	147	166	190.5	
	28	29.591	29.335	29.322	29.416	38	52	51	42	63	59	54.7	65	34	177	243	288.5	
	29	29.578	29.498	29.528	29.535	40	42	40	45	48	47	43.3	57	40	182	189	192.5	
	30	29.678	29.676	29.596	29.650	35	41	38	40	47	43	43.3	47	35	139	179	164.5	
Means....		29.689	29.619	29.659	29.680	.....	.....	.....	42.0	52.7	47.3	47.2	.....	.....	197	235	215.5	

thern and northwestern lakes, at Sackett's Harbor, New York.

VAPOR.			WIND.					Amount of cloudiness.			Amount of evaporation, in U. S. inches and decimals.	Amount of rain or melted snow, in U. S. inches and decimals.			
Humidity. uration = 1,000.								(0 — clear sky) (10 — sky entirely overcast)							
9 p. m.								Resultant velocity, in miles, per hour.	Resultant direction.	7 a. m.	9 p. m.	9 p. m.			
.607	8							9.7	South ..	10	10	3			
.953	9	Ca						1.3	N. 45 E.	10	9	8			
.563	7	S						12.7	S. 45 W.	9	5	0			
.655	4	W						18.3	West ..	10	10	10			
.509	3	N						14.6	N. 45 W.	5	7	1		.08	
.515	9	N						8.7	N. 64 W.	3	7	0			
.610	9	N						27.7	N. 88 W.	1	4	10			
.449	6	N						4.3	N. 50 W.	10	6	10			
.508	1	N						2.0	N. 45 W.	9	10	7		.04	
.449	8	Ca						4.7	S. 45 W.	0	2	6		.04	
.719	5	S						38.3	South ..	10	10	10			
.705	8	N						2.7	N. 45 E.	10	10	10		.04	
.688	3	N						16.3	N. 45 E.	10	10	10		.10	
.680	7	Ca						2.0	South ..	10	10	10		.08	
.811	7	N						2.3	N. 24 E.	10	10	10		.80	
.719	0	S						16.0	S. 45 W.	10	10	10		.70	
.348	0	N						31.7	N. 45 W.	8	9	3		.06	
.570	5	N						5.0	S. 61 W.	5	9	1		.04	
.483	5	N						1.7	N. 56 W.	11	8	1		.04	
.349	5	N						30.7	N. 45 E.	7	11	10			
.744	4	N						5.7	N. 83 W.	10	10	9		.34	
.622	2	W						12.7	S. 88 W.	10	3	8			
.490	6	E						10.0	S. 8 E.	9	10	10			
.608	2	W						5.0	S. 82 W.	10	9	9		.10	
.541	3	W						41.7	West ..	10	7	2		.06	
.449	9	N						9.7	N. 41 W.	10	8	0		.04	
.582	9	N						0.7	N. 73 W.	2	3	0			
.483	6	E						9.0	S. 7 E.	5	10	10			
.581	3	S						13.0	S. 63 W.	10	9	10		.22	
.628	3	N						5.0	S. 84 W.	10	4	3		.08	
.567	8	SL						13.3	S. 3 E.	10	10	10			
.594	.648	.617						5.9	S. 10 W.	6.2	7.9	6.5		2.63	
2 .636	.619	W	SW	W	4	9	2	2.7	S. 80 W.	10	10	10		.30	
2 .669	.668	720	Calm	SW	Calm	0	4	0	1.3	S. 45 W.	5	6	0		
3 .483	.669	.682	NE	N	NE	2	2	4	2.7	N. 33 E.	1	3	5		
8 .647	.606	.641	Calm	Calm	Calm	0	0	0	0	Calm	8	0	0		
23 .497	.581	.544	S	S	S	12	12	25	16.3	South ..	0	2	3		
4 .661	.719	.665	S	SW	SW	2	4	12	6.0	S. 40 W.	9	10	8		
14 .619	.686	.670	N by W.	W	SW	4	2	2	1.7	N. 58 W.	8	10	10		
38 .393	.610	.597	S	N	N	2	12	2	4.0	North ..	7	5	0		
35 .433	.550	.548	Calm	W	S	0	4	2	1.7	S. 67 W.	0	2	0		
32 .434	.581	.599	Calm	S	S	0	12	12	8.0	South ..	0	5	2		
37 .493	.543	.541	S	S	Calm	25	4	0	9.7	South ..	10	7	0		
39 .424	.619	.361	Calm	S	S	0	12	25	12.3	South ..	0	3	2		
77 .624	.567	.623	SW	SW	Calm	11	12	0	8.0	S. 45 W.	5	2	0		.08
19 .432	.716	.589	Calm	S	SW	0	12	4	5.0	S. 10 W.	7	9	1		
36 .624	.636	.632	SW	SW	Calm	4	4	0	2.7	S. 45 W.	5	3	0		
26 .483	.546	.553	NE	NE	Calm	12	12	0	8.0	N. 45 E.	4	3	0		
67 .441	.683	.564	SE	S	S	2	12	4	6.0	S. 5 E.	2	3	2		
52 .532	.588	.557	S	S	S	2	25	25	17.3	South ..	3	8	3		
43 .647	.747	.686	S	Calm	NE	4	0	12	3.3	N. 63 E.	8	10	5		
43 .663	.690	.699	Calm	SW	S	0	2	2	1.3	S. 21 W.	9	8	10		.20
125 .570	.552	.649	SW	SW	SW	12	12	25	16.3	S. 45 W.	11	8	7		.30
168 .592	.535	.598	S	SW	SW	2	4	2	2.7	S. 33 W.	3	4	0		
391 .722	.777	.730	NE	NE	NE	12	35	45	30.7	N. 45 E.	4	10	10		
172 .738	.661	.710	NW	W	W	12	35	25	2.3	N. 83 W.	10	10	9		1.28
728 .669	.719	.672	W	W	NW	12	25	12	15.3	N. 79 W.	10	10	10		.32
703 .577	.607	.633	N	SW	S	4	12	2	3.7	S. 51 W.	6	5	10		.11
527 .494	.736	.600	NW	SW	N	12	12	2	6.0	N. 83 W.	9	4	0		
561 .492	.537	.540	Calm	W	W	0	2	25	9.0	West ..	4	8	7		
807 .563	.483	.551	W	W	NW	35	45	25	33.0	N. 80 W.	2	3	9		
557 .584	.587	.568	NW	SW	S	12	25	2	9.7	S. 67 W.	2	3	0		
667 .556	.628	.618						3.7	S. 57 W.	5.0	5.7	4.0		2.88	

Reductions of the monthly meteorological register of the survey

Date.	Barometer reduced to temperature of 32° Fahr., expressed in United States inches and decimals.				TEMPERATURE—FAHRENHEIT.										VAPOR.				
					Wet bulb, or point of evaporation.			Dry bulb, or temperature of the open air.				Maximum.	Minimum.	Elasticity, in U. S. inches and decimals.					
	7 a. m.	2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.	Mean.			7 a. m.	2 p. m.	9 p. m.	Mean.		
1866.																			
May	1	29.602	29.451	29.318	29.457	33	43	42	37	52	49	46.0	52	31	136.	129.	134.	135.	135.
	2	29.586	29.441	29.429	29.419	34	38	39	40	44	45	43.0	46	35	112.	151.	140.	140.	140.
	3	29.549	29.526	29.496	29.524	35	41	40	40	47	45	47.3	47	36	139.	179.	154.	154.	154.
	4	29.484	29.488	29.461	29.478	39	42	41	43	48	45	45.3	50	39	176.	189.	182.	182.	182.
	5	29.426	29.525	29.546	29.519	39	45	42	43	51	48	47.3	51	38	186.	239.	212.	212.	212.
	6	29.668	.....	29.705	29.627	41	.....	45	44	.....	50	47.0	54	32	212.	.....	234.	234.	234.
	7	29.937	29.969	29.870	29.925	38	45	42	42	53	48	47.7	54	36	177.	124.	154.	154.	154.
	8	29.837	29.715	29.525	29.692	39	49	51	45	60	58	54.3	62	35	160.	293.	253.	253.	253.
	9	29.365	29.467	29.475	29.436	49	49	47	52	54	51	52.3	58	47	302.	293.	274.	274.	274.
	10	29.655	29.695	29.625	29.658	42	50	52	45	55	56	52.0	60	40	228.	226.	227.	227.	227.
	11	29.647	29.616	29.579	29.614	49	57	57	55	65	62	60.7	69	47	269.	359.	319.	319.	319.
	12	29.632	29.618	29.531	29.594	50	59	60	54	68	67	63.0	70	49	308.	326.	317.	317.	317.
	13	29.402	29.392	29.505	29.430	58	48	44	62	51	48	53.7	67	44	429.	326.	328.	328.	328.
	14	29.678	29.713	29.668	29.686	37	44	43	43	49	47	46.3	49	37	142.	323.	324.	324.	324.
	15	29.736	29.635	29.508	29.626	39	46	49	43	52	55	50.0	55	38	126.	232.	229.	229.	229.
	16	29.428	29.603	29.658	29.563	49	43	43	52	47	47	42.7	55	41	308.	235.	229.	229.	229.
	17	29.721	29.713	29.623	29.686	38	49	49	41	56	53	50.0	60	35	190.	225.	224.	224.	224.
	18	29.603	29.549	29.512	29.555	45	59	57	49	66	62	59.0	67	40	247.	407.	354.	354.	354.
	19	29.552	29.571	29.582	29.568	51	56	55	55	62	60	59.0	64	50	321.	369.	345.	345.	345.
	20	29.529	29.361	29.293	29.394	54	63	64	57	70	68	65.0	74	52	372.	432.	402.	402.	402.
	21	29.396	29.407	29.405	29.403	51	48	47	56	55	51	54.0	67	47	302.	243.	250.	250.	250.
	22	29.496	29.541	29.546	29.528	39	43	44	42	48	49	46.3	51	38	199.	212.	205.	205.	205.
	23	29.658	29.688	29.678	29.675	41	43	43	47	50	49	48.7	50	38	179.	186.	184.	184.	184.
	24	29.770	29.697	29.583	29.685	41	47	47	45	55	53	51.0	55	40	205.	217.	211.	211.	211.
	25	29.535	29.420	29.447	29.487	45	51	50	49	58	55	54.0	59	45	247.	282.	264.	264.	264.
	26	29.490	29.442	29.417	29.453	44	55	55	48	63	62	57.7	66	42	236.	327.	340.	340.	340.
	27	29.310	29.161	29.049	29.173	51	56	53	56	61	56	57.7	61	51	308.	323.	315.	315.	315.
	28	28.944	29.029	29.215	29.063	50	50	48	53	53	52	52.7	55	47	321.	321.	321.	321.	321.
	29	29.307	29.327	29.375	29.336	47	60	47	50	65	51	55.3	65	44	283.	451.	294.	294.	294.
	30	29.373	29.415	29.375	29.388	45	50	50	48	55	54	52.3	56	44	260.	295.	303.	303.	303.
	31	29.558	29.767	29.794	29.706	45	47	46	48	54	50	50.7	55	44	260.	231.	253.	253.	253.
Means....		29.540	29.533	29.510	29.528	.....	.....	.....	47.9	55.3	53.0	52.2	.....	.....	240.	275.	278.	278.	278.
June	1	29.894	29.855	29.795	29.848	43	54	54	47	61	58	55.3	64	38	225.	325.	335.	335.	335.
	2	29.794	29.722	29.644	29.700	46	57	58	50	65	64	59.7	67	45	253.	359.	413.	413.	413.
	3	29.632	29.602	29.538	29.591	50	65	62	55	73	68	65.3	73	49	295.	510.	478.	478.	478.
	4	29.506	29.506	29.478	29.497	60	65	63	65	70	67	67.3	73	60	551.	559.	529.	529.	529.
	5	29.551	29.541	29.591	29.561	61	67	68	64	71	72	69.0	74	60	497.	608.	621.	621.	621.
	6	29.475	29.343	29.404	29.407	67	67	57	71	72	61	68.0	73	58	602.	385.	412.	412.	412.
	7	29.367	29.304	29.420	29.364	52	54	55	55	58	58	57.0	61	52	349.	353.	351.	351.	351.
	8	29.545	29.662	29.657	29.621	55	58	56	58	64	60	60.7	64	53	383.	403.	386.	386.	386.
	9	29.709	29.683	29.653	29.682	58	67	63	63	75	70	69.3	75	52	416.	554.	604.	604.	604.
	10	29.789	29.796	29.784	29.783	62	62	57	68	68	63	66.3	69	57	476.	476.	484.	484.	484.
	11	29.945	29.947	29.883	29.925	52	54	55	59	65	60	61.3	66	49	296.	272.	307.	307.	307.
	12	29.891	29.833	29.730	29.818	53	53	54	59	63	60	60.7	63	54	323.	270.	338.	338.	338.
	13	29.592	29.478	29.435	29.502	54	68	69	59	75	74	69.3	77	53	351.	591.	621.	621.	621.
	14	29.468	29.423	29.431	29.441	64	64	59	69	71	64	68.0	74	60	641.	533.	612.	612.	612.
	15	29.441	29.436	29.516	29.464	54	58	55	59	65	60	61.3	66	52	351.	399.	361.	361.	361.
	16	29.407	29.503	29.596	29.502	54	64	61	59	71	67	65.7	72	52	351.	503.	457.	457.	457.
	17	29.581	29.591	29.414	29.527	60	66	62	65	70	66	67.0	71	58	451.	586.	594.	594.	594.
	18	29.191	29.258	29.278	29.242	65	62	60	69	69	64	67.3	70	60	564.	442.	454.	454.	454.
	19	29.340	29.474	29.545	29.453	54	52	52	58	56	56	56.7	63	52	365.	335.	353.	353.	353.
	20	29.775	29.731	29.699	29.735	51	63	56	55	70	63	62.7	70	49	321.	422.	354.	354.	354.
	21	29.753	29.680	29.560	29.664	61	68	70	67	77	75	73.0	80	58	457.	564.	609.	609.	609.
	22	29.576	29.593	29.546	29.572	63	63	60	67	69	65	67.0	74	61	482.	485.	451.	451.	451.
	23	29.616	29.630	29.613	29.620	59	67	67	65	74	73	70.7	75	56	439.	568.	581.	581.	581.
	24	29.743	29.744	29.707	29.731	62	72	72	68	79	78	75.0	82	56	476.	639.	704.	704.	704.
	25	29.709	29.689	29.680	29.693	72	72	64	79	80	71	76.7	80	64	686.	677.	652.	652.	652.
	26	29.778	29.667	29.520	29.655	61	69	72	67	78	79	74.7	82	60	437.	528.	590.	590.	590.
	27	29.425	29.423	29.486	29.445	69	63	60	75	68	64	69.0	76	60	628.	509.	554.	554.	554.
	28	29.656	29.704	29.729	29.696	53	56	55	59	63	59	60.3	66	53	323.	356.	380.	380.	380.
	29	29.818	29.817	29.792	29.809	51	59	57	55	66	62	61.0	66	48	321.	407.	394.	394.	394.
	30	29.875	29.867	29.885	29.876	47	60	56	53	68	61								



hern and northwestern lakes, at Sackett's Harbor, New York.

VAPOR.			WIND.									Amount of cloudiness. (0 = clear sky.) (10 = sky entirely overcast.)			Am't of evaporation, in U. S. inches and decimals.	Am't of rain or melted snow, in U. S. inches and decimals.
Humidity. ration = 1,000.			Direction. From whence.			Velocity, in miles, per hour.			Resultant velocity, in miles, per hour.	Resultant direction.						
2 p. m.	9 p. m.	Mean.	7 a. m.	2 p. m.	9 p. m.	7 a. m.	2 p. m.	9 p. m.			7 a. m.	2 p. m.	9 p. m.	Am't of evaporation, in U. S. inches and decimals.		
.411	.505	.512	NE....	NE....	NE....	4	4	4	4.0	N. 45 E.	5	10	10			
.522	.533	.510	N. NE.	N....	NW....	25	12	12	14.3	N. 2 E.	3	10	10			
.554	.607	.573	NW....	W....	W....	25	25	12	19.0	N. 12 W.	9	8	10			
.563	.684	.639	W....	SW....	SW....	12	25	4	12.7	S. 58 W.	4	10	3			
.590	.563	.607	NW....	SW....	S....	12	12	2	6.0	S. 81 W.	8	10	4			
	.646	.701	S....		SW....	2		2	1.3	S. 21 W.	2		0			
.483	.563	.569	NE....	W....	S....	4	12	2	3.0	N. 85 W.	0	5	0			
.392	.584	.503	S....	W....	NE....	2	2	12	3.0	N. 45 E.	2	8	10			
.674	.722	.731	W....	SW....	W....	12	25	12	15.0	S. 67 W.	10	5	6		.20	
.681	.747	.730	S....	W....	Calm	4	4	0	2.0	S. 45 W.	0	2	0			
.582	.718	.640	S....	SW....	Calm	4	12	0	5.0	S. 33 W.	7	2	0			
.557	.642	.646	Calm	W....	S....	0	12	2	4.3	S. 81 W.	2	4	5			
.790	.704	.755	S....	N....	NW....	12	12	4	8.3	N. 45 W.	10	10	10		.24	
.638	.698	.616	NW....	W....	W....	25	35	25	26.3	N. 77 W.	5	8	6		1.22	
.598	.620	.629	S....	SW....	S....	12	4	2	5.7	S. 9 W.	10	9	10			
.698	.698	.730	W....	NE....	NE....	2	35	4	12.7	N. 43 E.	10	10	0		.30	
.569	.733	.680	NE....	NE....	S....	2	4	2	1.7	N. 65 E.	0	0	0		.10	
.636	.718	.688	SW....	SW....	Calm	2	2	0	1.3	S. 45 W.	6	9	2			
.665	.708	.705	E....	W....	Calm	4	12	0	2.7	West...	0	7	5			
.658	.793	.754	E....	W....	S....	2	12	12	5.3	S. 39 W.	3	0	10			
.561	.722	.657	SW....	SW....	W....	4	45	45	28.7	S. 67 W.	7	5	9		.32	
.631	.638	.671	NW....	W....	NW....	25	25	25	23.3	N. 60 W.	10	9	10		.10	
.515	.572	.547	W....	SW....	SW....	25	35	12	22.7	S. 60 W.	5	9	8		.06	
.502	.606	.597	S....	SW....	SW....	12	25	12	15.3	S. 34 W.	7	9	10			
.584	.681	.658	S....	SW....	S....	4	25	4	10.3	S. 34 W.	2	3	5			
.568	.612	.628	SE....	NE....	NE....	2	4	12	5.3	N. 52 E.	3	4	10			
.713	.809	.736	NE....	NE....	NE....	25	35	35	31.7	N. 45 E.	10	10	10			
.798	.727	.774	SW....	NW....	W....	12	12	25	14.0	West...	10	10	9		.34	
.731	.722	.746	SW....	SW....	W....	12	4	4	6.3	S. 53 W.	4	10	10		.12	
.681	.738	.732	S....	SW....	SW....	4	12	25	13.7	S. 41 W.	10	10	10		.06	
.552	.716	.682	NW....	SW....	SW....	12	25	4	10.7	S. 68 W.	10	3	0		.16	
M	.603	.669							5.7	S. 87 W.	8.8	6.7	6.2		3.22	
98	.606	.756	.687	S....	W....	Calm	4	12	0	4.3	S. 72 W.	7	5	3		
16	.582	.675	.658	Calm	W....	Calm	0	4	0	1.3	West...	3	5	0		
81	.629	.695	.668	E....	W....	SE....	4	12	2	2.3	S. 79 W.	10	8	9		
31	.751	.790	.757	E....	S....	NE....	2	4	2	1.3	S. 53 E.	10	10	5		
133	.802	.804	.813	E....	S....	S....	2	2	2	1.7	S. 23 E.	9	10	10		.66
102	.758	.769	.776	S....	SE....	SW....	4	4	25	9.3	S. 31 W.	5	10	9		.58
105	.756	.816	.792	SW....	SW....	W....	12	25	12	15.7	S. 55 W.	10	10	9		.56
116	.675	.765	.752	SW....	NE....	NE....	4	25	2	7.7	N. 45 E.	10	10	3		.10
723	.639	.658	.673	S....	S....	S....	4	35	35	24.7	South...	5	6	7		
695	.695	.670	.687	SW....	SW....	SW....	12	12	4	9.3	S. 45 W.	4	0	0		
592	.441	.708	.580	NE....	NE....	Calm	25	12	0	12.3	N. 45 E.	0	6	9		
647	.470	.653	.590	NE....	NE....	NE....	12	12	4	9.3	N. 45 E.	10	10	6		
703	.681	.764	.716	E....	S....	S....	2	12	4	5.7	S. 7 E.	10	7	3		
764	.663	.727	.718	SW....	SW....	SW....	2	12	25	13.0	S. 45 W.	5	9	3		.22
703	.631	.708	.714	SW....	SW....	SW....	12	25	12	16.3	S. 45 W.	0	4	5		
703	.663	.690	.685	S....	W....	S....	4	4	2	2.7	S. 30 W.	9	4	1		
731	.799	.786	.772	S....	S....	NE....	2	4	25	7.0	N. 56 E.	9	10	10		
796	.653	.780	.743	SE....	SW....	S....	4	12	2	4.7	S. 22 W.	10	6	3		.98
756	.747	.747	.750	S....	SW....	SW....	25	45	35	33.0	S. 35 W.	10	10	10		.08
743	.658	.619	.673	S....	SW....	SW....	12	12	4	8.7	S. 26 W.	10	4	0		.10
690	.608	.768	.689	S....	SW....	Calm	12	4	0	5.0	S. 11 W.	0	0	1		
790	.700	.731	.740	S....	SW....	SW....	12	25	4	12.7	S. 32 W.	10	6	2		.14
680	.677	.716	.691	SW....	SW....	S....	2	12	2	5.0	S. 39 W.	3	4	3		.08
695	.697	.734	.709	E....	W....	Calm	2	4	0	0.7	West...	6	3	2		
697	.670	.663	.677	SW....	SW....	SW....	35	25	25	28.3	S. 45 W.	7	6	9		
690	.613	.697	.667	S....	W....	NW....	4	12	25	10.7	N. 65 W.	3	8	9		
724	.743	.780	.749	S....	SW....	SW....	12	4	12	8.7	S. 25 W.	9	10	8		.04
647	.619	.761	.676	NE....	NW....	W....	25	12	4	9.0	N. 11 E.	10	6	2		.30
743	.636	.718	.699	S....	W....	S....	2	25	2	8.7	S. 81 W.	9	3	1		
.606	.601	.713	.640	E....	W....	S....	2	12	2	3.7	S. 79 W.	3	4	0		
.720	.662	.729	.704						5.6	S. 39 W.	3.5	3.1	4.7		3.84	



APPENDIX C.

Return of charts issued at Detroit and Buffalo from October 1, 1865, to Jan 30, 1866.

Months.	Lake Erie.	West end of Lake Erie.	Kelly's and Bass islands.	Straits of Mackinac.	East Nubish rapids.	Head of Green bay.	St. Clair flats.	Buffalo harbor.	Tawas harbor.	Beaver group.	Eagle harbor.	Agate harbor.	St. Mary's river, No. 1.	St. Mary's river, No. 2.	Maumee bay.	Eagle river.	Ontonagon harbor.	Saginaw bay.	Thunder bay.	Marquette harbor.	Presque isle and Middle island.	Lake Huron.	South end of Lake Huron.	Grand island, L. S.	West end of Lake Superior.	Grand and Little Traverse bays.	Totals in each month.
1865.																											
October .....	11	11	11	9	6	8	12	12	12	10	7	7	7	7	12	7	7	14	14	9	13	14	11	8			123
November .....	7	6	6	7	5	6	5	7	5	6	5	5	5	5	6	5	5	9	8	6	9	10	7	5			151
December .....	4	4	4	4	3	1	4	4	4	4	3	3	3	3	4	3	3	4	4	3	4	4	1	2			54
1866.																											
January .....	1	1	1	1	2	1	1	1	1	1	2	2	2	2	1	2	2	1	1	2	1	1	1	2	1	1	35
February .....	2	2	2	3	1	3	2	3	1	3	1	1	1	1	3	1	1	3	3	1	3	3	3	1	1	6	56
March .....	2	2	2	2	1	2	2	2	3	2	1	1	1	1	3	1	1	5	4	1	4	4	6	1	1	3	54
April .....	17	20	19	19	17	18	20	18	18	17	18	18	21	20	21	20	20	19	20	21	19	21	21	25	31	30	521
May .....	25	22	22	24	17	21	22	18	21	23	17	16	17	17	19	17	16	24	23	16	24	22	21	20	21	28	533
June .....	12	17	19	20	15	16	12	20	16	19	13	16	14	14	12	17	17	13	15	18	7	7	9	19	23	23	405
Totals of each.	81	85	86	89	67	76	80	85	81	85	67	69	71	70	81	73	72	92	92	77	84	86	80	84	78	91	2,021

Table showing the annual issue prior to July 1, 1866.

Prior to October 1, 1857 .....	2,500
October 1, 1857, to October 1, 1858 .....	1,675
October 1, 1858, to October 1, 1859 .....	2,600
October 1, 1859, to October 1, 1860 .....	4,890
October 1, 1860, to October 1, 1861 .....	3,254
October 1, 1861, to October 1, 1862 .....	5,245
October 1, 1862, to October 1, 1863 .....	4,064
October 1, 1863, to October 1, 1864 .....	3,283
October 1, 1864, to October 1, 1865 .....	2,589
October 1, 1865, to July 1, 1866 .....	2,082
Total to July 1, 1866 .....	32,202

APPENDIX D.

OFFICE U. S. LAKE SURVEY, December 14, 1865.

SIR: In accordance with your orders we have the honor to submit the following report, showing the comparative value of observations made with Gambey and Würdemann theodolites. The instruments tested were as follows, viz:

1st. "Gambey No. 1." 10-inch limb, divided to 5 minutes, and reading by two verniers to 5 seconds. Focal length of telescope 19½ inches, without transit motion.

2d. "Würdemann No. 65." Transit; 10-inch limb, reading the same as above. Focal length 20 inches.

3d. "Gambey No. 2." 6-inch limb, reading the same as above; telescope without transit motion. Focal length 14½ inches.

4th. "Würdemann No. 68." Transit; just received; 10½-inch limb, reading the same as above. Focal length 20 inches.

In testing the first two theodolites the discrepancies were found to be so great between the Gambey and Würdemann instruments of the same size that it was determined to compare the performance of the "Little Gambey" with that of the larger Würdemann instruments. Our first tests were made according to Chauvenet's method, (Astrom., vol. ii, page 29, *seq.*,) and used by J. E. Hilgard, (Report U. S. Coast Survey, 1856,) in which the observer, standing in one position, so that the illumination is always from the same direction, reads both verniers of the instrument for every 10° of the graduation.

These readings and their results are given in the first set of tables, marked A. Taking for example Gambey No. 1, tangent screw turned to the right, in the columns A and B, will be found the readings, taken as above. The differences of the readings A and B are due, first, to their constant angular distance being more or less than 180°, which may be designated by 180° +  $l$ ; second, to the eccentricity of the alidade; third, to the errors of graduation; and fourth, to errors of reading.

Designating by  $u$  the effect of eccentricity on the difference of the verniers, we have  $B - A = 180^\circ + l + u$ , and for a position differing 180° from the former  $B - A = 180^\circ + l - u$ . The mean of the differences  $B - A$  for readings 180° apart will express the angular distance of the verniers cleared of the effect of eccentricity, but affected by the errors of graduation and reading. The column *Mean*, under  $B - A$ , gives these values, the mean of which is  $-9''.4$ , showing that the zero of vernier B is distant from that of vernier A.  $179^\circ 59' 50''.6$ . The differences  $\Delta$  of the several values from this mean are due to errors of graduation and reading. If we ascribe to the indication of one vernier the mean error  $m$  arising from both sources, each of the differences  $B - A$  is affected by the mean error  $m \sqrt{2}$ , and the mean of two such differences is again affected by the mean error  $m = \sqrt{\frac{s \Delta^2}{(u - 1)}} = 1''.43$ .

In table 3 a large and more probable value is found for the same uncertainty. To determine the eccentricity of the instrument, subtract from the differences  $B - A$ , in table 1, the constant difference  $-09''.4$  of the verniers; the residuals will be composed of the effect of eccentricity and errors of graduation and reading, and are given in table 2, under the head of  $u + m$ . Designating by  $\epsilon$  the angular value of the eccentricity, and by  $\rho$  that reading on the limb indicated by the line of eccentricity, or the line passing through the centres of graduation and motion, then  $r - \rho$  is the angle which the verniers make for any reading  $r$  with the line of eccentricity, and  $2 \epsilon \sin (r - \rho) = u$  will be the effect of eccentricity. For any reading  $r^1$  differing 180° from  $r_1$   $u^1 = -2 \epsilon \sin (r - \rho)$ .

The column  $\frac{I - II}{2} = s$  gives these values, affected in a less degree by errors of reading and graduation.

The values of  $\epsilon$  and  $\rho$  are obtained from those of  $s$  in the tables by means of the following equations:

$$2 \epsilon \cos \rho = \frac{2}{n} \left( s_1 \sin 0^\circ + s_2 \sin 10^\circ - \dots + s_{18} \sin 170^\circ \right)$$

$$2 \epsilon \sin \rho = \frac{2}{n} \left( s_1 \cos 0^\circ + s_2 \cos 10^\circ - \dots + s_{18} \cos 170^\circ \right)$$

Table 2 gives the sines, cosines, and products, and the sums of the latter

$$\text{Tang } \rho = \frac{\int (s \sin r)}{\int (s \cos r)} = \text{tang } (-62^\circ)$$

$$\rho = -62; \quad \epsilon = 01''.5.$$

To determine the residual errors of graduation and reading, table 3 is formed by computing  $u = 2 \epsilon \sin (r - \rho)$  for each reading and subtracting these values from those of  $u + m$  in table 2. Dividing the sum of the squares of the residuals  $m$  by  $n - 1$ , and extracting the square root, we have  $3''.8$ , which divided  $\sqrt{2}$  gives the mean uncertainty of the reading of one vernier depending upon the errors of reading and graduation.

The same process was pursued for all the instruments, and the results are given in tables A.

It will be noticed that two separate tests are given for each instrument, one with the tangent screw turned continually to the right, and the other with the motion in the opposite direction.

An examination of table C, in which the results are placed together, will show that the Gambey instruments are affected but slightly by this change while it exerts a marked effect on the Würdemann instruments. This is mainly due to the difference of arrangement of the clamps and tangent screws. In the Gambey instruments the clamps are attached to the outside of the limb, and the tangent screws work in a double ball and socket joint, which allows of no backlash or loss of motion taken up by the screw, and when the instrument is directed to a point by the tangent screw it remains stationary.

On the other hand, in the Würdemann the limb clamp encircles the outer spindle, and the tangent screws work against a strong spring. This attachment has never proved as firm as the former, and the backlash of the tangent screws is always large; besides, the effect of the spring is to continue the motion of the instrument after the tangent screw has ceased to act. These imperfections greatly increase the time required for pointing the instrument, particularly as it is essential to have the last motion of the screw always in the same direction; for reversing the motion of the tangent screw so changes the centre of motion as to produce a change in the angular distance of the verniers equal in No. 65 to  $6''.8$ , and in No. 86 to  $5''.8$ , as is shown in table C, and the backlash renders it difficult to give the small motion required.

The above method, though perhaps the best for determining the eccentricity and errors of graduation, does not give a complete idea of the value of an instrument. This can only be determined by its actual performance in the field, for the *final* test must always be the measurement of a series of triangles. As the best available substitute, we adopted the following method, though for want of time have not been able to pursue the investigations as far as desirable.

In a large field a post 12 inches square was firmly placed in the ground. In different directions from the post, at distances varying from 500 to 1,000 feet, sight-marks, consisting of cards with a slot 2 inches long and  $\frac{1}{8}$  inch wide cut in them, were placed as nearly as possible in the horizontal of the instrument. Readings were then taken with each theodolite in the order named in the tables to these points, the instruments being set successively at  $0^\circ$ ,  $20^\circ$ ,  $40^\circ$ , &c., around the circle. The angles deduced from these readings are given in table B. It was intended to read the angles, turning the tangent screws in both directions, at two other points. In all these observations the tangent screws were turned to the right.

The probable error of one observation was computed by Gauss's formula.

$$\text{Prob. error} = 0.845347 \frac{\sum f}{\sqrt{n(n-1)}},$$

in which

$\sum f$  = arithmetical sum of differences from mean, and

$n$  = the number of observations.

In the table of "final results" are given the mean angles and their sums, and also the probable error and range of the observations.

An important point shown by this table is the range, or the difference in the readings of the same angle. The mean range of Gambey No. 1 is  $11''.3$ , of Gambey No. 2,  $17''.7$ , while that of the Würdemann instruments is respectively  $30''.7$  and  $35''.7$ . It will always be noticed that the range and probable error for the Gambey instruments are nearly the same in every angle, while for the Würdemann instruments the variation is quite large. This shows that were it possible to obtain the value of any angle by the latter with equal accuracy, a much greater number of observations would be necessary than are required in using the former instruments.

A general summary of all the results obtained is given in table C, where it will be seen that taking the value of observations by Gambey No. 1 equal to 1, the comparative value of Gambey No. 2 is 0.44, and of the Würdemann instruments 0.17 and 0.15, respectively.

In the measurement of the angles of the main triangulation of the lakes the Gambey theodolites have been the only instruments which could be depended upon, for even the two Gambey limbs which were remounted by Mr. Würdemann cannot be relied upon for accurate work. Würdemann theodolite No. 65 was issued to the survey in 1857. General, then Lieutenant, O. M. Poe, United States engineers, in charge of the main triangulation, used it in the survey of Saginaw bay, and reported it unfit for the purpose for which it was designed. Subsequently Assistant James Carr made a similar report on its merits. Theodolite No. 86, by the same maker, was probably constructed about the same time, and shows evidence of considerable use. The results in table C demonstrate that it is no better than No. 65. The telescope is new and of good quality, but the eccentricity of the axes is equal to  $08''.5$  of arc. The want of parallelism of the vertical axes amounts to one division of the level =  $3''.4$  of arc. The difference in the size of the pivots equals 3 divisions of the level, or .0000032 of an inch.

We have the honor to be your obedient servants,

D. FARRAND HENRY.  
O. N. CHAFFEE.

Colonel W. F. RAYNOLD, *Corps of Engineers U. S. A.,*  
*Superintendent U. S. Lake Survey, Detroit, Michigan.*



## A.—GAMBEY No. 1.—Tangent screw turned to the right.

TABLE 3.—Residual errors of graduation and reading.

$-\rho$	$\sin r - \rho$	$2 \varepsilon \sin r - \rho$	$r.$	$m.$	$m^2.$	$r.$	$m.$	$m^2.$
			0	"		0	"	
42	— .882	— 2.6	00	+ 2.0	4.00	180	— 3.2	10.24
32	— .788	— 2.3	10	— 0.3	0.09	190	+ 2.1	4.41
22	— .666	— 2.0	20	— 0.6	0.36	200	— 2.6	6.76
12	— .530	— 1.6	30	+ 1.0	1.00	210	— 2.2	4.84
02	— .375	— 1.1	40	— 1.5	2.25	220	+ 3.3	10.89
90	— .208	— 0.6	50	— 5.0	25.00	230	+ 3.8	14.44
82	— .017	— 0.1	60	— 0.5	0.25	240	+ 4.3	18.49
72	+ .139	+ 0.4	70	— 4.0	16.00	250	+ 4.8	23.04
62	+ .309	+ 0.9	80	— 4.5	20.25	260	+ 3.5	12.25
52	+ .470	+ 1.4	90	— 7.0	49.00	270	+ 0.8	0.64
42	+ .616	+ 1.9	100	— 7.5	56.25	280	+ 3.3	10.89
32	+ .743	+ 2.3	110	— 5.9	34.81	290	+ 6.7	44.89
22	+ .848	+ 2.5	120	— 3.1	9.61	300	+ 6.9	47.61
12	+ .927	+ 2.8	130	— 1.4	1.96	310	+ 2.2	4.84
02	+ .978	+ 2.9	140	— 1.5	2.25	330	+ 0.3	0.09
92	+ .999	+ 3.0	150	+ 1.4	1.96	370	+ 4.4	19.36
82	+ .990	+ 3.0	160	— 3.6	12.96	340	+ 2.4	5.76
72	+ .951	+ 2.8	170	— 3.4	11.56	350	+ 4.2	17.64
Probable error of 1 observation = 2".68.					249.56			257.08
					$\sqrt{\frac{506.64}{35}} = 3''.80$			249.56
								506.64

## A.—GAMBEY No. 1.—Tangent screw turned to the left.

TABLE 1.—Determination of angular distance of verniers.

I.			II.			B—A.			$\Delta$	$\Delta^2$
A.	B.		A.	B.		I.	II.	Mean.		
"	"	"	0	"	"	"	"	"	"	"
10 00	00	55	180 00	00	55	— 05	— 05	— 05.0	+ 2.2	4.84
10 00	00	50	190 00	00	55	10	05	07.5	— 0.3	0.09
20 00	00	50	200 00	00	52	10	08	09.0	— 1.8	3.24
30 00	00	50	210 00	00	55	10	05	07.5	— 0.3	0.09
40 00	00	50	220 00	00	52	10	08	09.0	— 1.8	3.24
50 00	00	52	230 00	00	00	08	00	04.0	+ 3.2	10.24
60 00	00	50	240 00	00	57	10	03	06.5	+ 0.7	0.49
70 00	00	45	250 00	00	57	15	03	09.0	— 1.8	3.24
80 00	00	50	260 00	00	58	10	02	06.0	+ 1.2	1.44
90 00	00	50	270 00	00	60	10	00	05.0	+ 2.2	4.84
00 00	00	47	280 00	00	55	13	05	09.0	— 1.8	3.24
10 00	00	50	290 00	00	55	10	05	07.5	— 0.3	0.09
20 00	00	52	300 00	00	55	08	05	06.5	+ 0.7	0.49
30 00	00	55	310 00	00	50	05	10	07.5	— 0.3	0.09
40 00	00	55	320 00	00	50	05	10	07.5	— 0.3	0.09
50 00	00	52	330 00	00	50	08	10	09.0	— 1.8	3.24
60 00	00	50	340 00	00	52	10	08	09.0	— 1.8	3.24
70 00	00	55	350 00	00	55	— 05	— 05	— 05.0	+ 2.2	4.84

Angular distance of verniers, 179° 59' 52".8.

18) 129.5

— 7.2

17) 47.07

 $m^2 = 2.77$  $m = 1.67$



A.—WÜRDEMANN No. 65.—Tangent screw turned to the right.

TABLE 3.—Residual errors of graduation and reading.

$r - p.$	$\sin r - p.$	$2 \epsilon \sin r - p.$	$r.$	$m.$	$m^2.$	$r.$	$m.$	$m^2.$
0			0			0		
340	— .342	— 1.6	0	+ 6.6	43.56	180	— 6.6	43.56
330	— .500	— 2.4	10	+ 12.4	153.76	190	— 12.4	153.76
320	— .642	— 3.1	20	+ 5.6	31.36	200	— 3.1	9.61
310	— .766	— 3.7	30	+ 3.7	13.69	210	— 11.5	132.25
300	— .866	— 4.1	40	+ 4.1	16.81	220	— 6.6	43.56
290	— .939	— 4.5	50	+ 2.0	4.00	230	+ 0.5	0.25
280	— .984	— 4.3	60	+ 6.8	46.24	240	+ 4.3	18.49
270	— 1.000	— 4.8	70	+ 9.8	96.04	250	— 7.3	53.29
260	— .984	— 4.3	80	+ 9.3	86.49	260	— 4.3	18.49
250	— .939	— 4.5	90	+ 4.5	20.25	270	+ 0.5	0.25
240	— .866	— 4.1	100	— 0.9	0.81	280	+ 0.9	0.81
230	— .766	— 3.7	110	— 1.3	1.69	290	— 1.2	1.44
220	— .642	— 3.1	120	— 1.9	3.61	300	+ 1.9	3.61
210	— .500	— 2.4	130	— 2.6	6.76	310	— 4.9	24.01
200	— .342	— 1.6	140	— 3.4	11.56	320	+ 3.4	11.56
190	— .174	— 0.8	150	— 9.2	84.64	330	+ 4.2	17.64
180	— .000	0.0	160	+ 2.5	6.25	340	+ 5.0	25.00
170	+ .174	+ 0.8	170	— 5.8	33.64	350	+ 3.3	10.89
Probable error of 1 observation = 04".22.					661.16			587.6
					$\sqrt{\frac{1248.63}{35}} = 5".97$			661.16
								1248.63

A.—WÜRDEMANN No. 65.—Tangent screw turned to the left.

TABLE 1.—Determination of angular distance of verniers.

I.			II.			B—A.			$\Delta$	$\Delta'$
A.		B.	A.		B.	I.	II.	Mean.		
0	'	"	0	'	"	"	"	"	"	"
00	00	00	180	00	00	+ 07	+ 05	+ 06.0	+ 1.8	3.24
10	00	00	190	00	00	+ 10	— 05	+ 02.5	— 0.7	0.49
20	00	00	200	00	00	12	— 05	+ 03.5	+ 0.3	0.09
30	00	00	210	00	00	05	— 03	01.0	— 2.2	4.84
40	00	00	220	00	00	10	+ 05	07.5	+ 4.3	18.49
50	00	00	230	00	00	02	05	3.5	+ 0.3	0.09
60	00	00	240	00	00	05	07	6.0	+ 2.8	7.84
70	00	00	250	00	00	00	00	0.0	— 3.2	10.24
80	00	00	260	00	00	00	08	4.0	+ 0.8	0.64
90	00	00	270	00	00	10	07	8.5	+ 4.3	18.49
100	00	00	280	00	00	+ 05	05	5.0	+ 1.8	3.24
110	00	00	290	00	00	— 05	07	1.0	— 2.2	4.84
120	00	00	300	00	00	00	10	5.0	+ 1.8	3.24
130	00	00	310	00	00	— 05	10	2.5	— 0.7	0.49
140	00	00	320	00	00	— 05	07	+ 1.0	— 2.2	4.84
150	00	00	330	00	00	— 05	02	— 1.5	— 4.7	22.09
160	00	00	340	00	00	00	00	0.0	— 3.2	10.24
170	00	00	350	00	00	— 05	+ 10	+ 2.5	— 0.7	0.49
Angular distance of verniers, 180° 00' 03".22.									18) 58.0	17) 113.92
									+ 3.22	$m^2 = 6".70$ $m = 2".59$

A.—WÜRDEMANN No. 65.—Tangent screw turned to the left.

TABLE 2.—Determination of eccentricity.

r.	I. u + m.	II. u + m.	$\frac{1-11}{2}=s.$	Sin r.	Cos r.	s sin r.	s cos r.
0	"	"	"				
00	+ 3.8	+ 1.8	+ 1.0	0.00	1.00	0.00	+ 1.00
10	+ 6.8	— 8.2	+ 7.5	.17	.98	+ 1.27	+ 7.75
20	+ 8.8	— 8.2	+ 8.5	.34	.94	+ 2.90	+ 7.99
30	+ 1.8	— 6.2	+ 4.0	.50	.87	+ 2.00	+ 3.48
40	+ 6.8	+ 1.8	+ 2.5	.64	.76	+ 1.60	+ 1.90
50	— 1.2	+ 1.8	— 1.5	.76	.64	— 1.14	— 0.96
60	+ 1.8	+ 3.8	— 1.0	.87	.50	— 0.87	— 0.50
70	— 3.2	— 3.2	— 0.0	.94	.34	0.00	0.00
80	— 3.2	+ 4.8	— 4.0	.98	.17	— 3.96	— 0.68
90	+ 6.8	+ 3.8	+ 1.5	1.00	.00	+ 1.50	0.00
100	+ 1.8	+ 1.8	0.0	.98	— .17	0.00	0.00
110	— 8.2	+ 3.8	— 6.0	.94	— .34	— 5.64	+ 2.04
120	— 3.2	+ 6.8	— 5.5	.87	— .50	— 4.79	+ 2.75
130	— 8.2	+ 6.8	— 7.5	.76	— .64	— 5.70	+ 4.80
140	— 8.2	+ 3.8	— 6.0	.64	— .76	— 3.84	+ 4.56
150	— 8.2	— 1.2	— 3.5	.50	— .87	— 1.75	+ 3.05
160	— 3.2	— 3.2	0.0	.34	— .94	0.00	0.00
170	— 8.2	+ 6.8	— 7.5	.17	— .98	— 1.27	+ 7.35
Angle of eccentricity = 156°. Eccentricity = $\epsilon = 02''.7$ .						+ 9.27 — 28.96	+ 46.27 — 2.14
						— 19.69	+ 44.13

A.—WÜRDEMANN No. 65.—Tangent screw turned to the left.

TABLE 3.—Residual errors of graduation and reading.

r — ρ	Sin r — ρ.	2ε sin r — ρ.	r.	m.	m².	r.	m.	m².
0		"	0	"		0	"	
156	+ .407	+ 2.20	00	+ 1.63	2.66	180	+ 4.03	16.24
146	.559	3.02	10	+ 3.81	14.52	190	— 5.15	26.52
136	.659	3.75	20	+ 5.08	25.81	200	— 4.42	19.54
126	.809	4.37	30	— 2.54	6.45	210	— 1.80	3.24
116	.899	4.85	40	+ 1.98	3.92	220	+ 6.68	44.62
106	.961	5.19	50	— 6.63	40.45	230	+ 7.02	49.28
96	.995	5.37	60	— 3.44	11.83	240	+ 9.20	84.64
86	.998	5.40	70	— 8.57	73.44	250	+ 2.23	4.97
76	.970	5.24	80	— 8.41	70.73	260	+ 10.07	101.40
66	.914	4.94	90	+ 1.89	3.57	270	+ 8.77	76.91
56	.829	4.48	100	— 2.65	7.02	280	+ 6.31	39.82
46	.719	3.89	110	— 12.06	145.44	290	+ 7.72	59.60
36	.588	3.18	120	— 6.35	40.32	300	+ 10.01	100.02
26	.438	2.27	130	— 10.44	108.99	310	+ 9.10	82.81
16	.275	1.48	140	— 9.65	93.12	320	+ 5.31	28.20
6	+ .105	+ 0.57	150	— 8.74	76.39	330	— 0.60	0.36
4	— .070	— 0.38	160	— 2.79	7.78	340	— 3.55	12.60
14	— .242	— 1.31	170	— 6.86	47.06	350	+ 5.52	30.47
Probable error of 1 observation = 4''.72.					779.49			781.24 779.49
					$\sqrt{\frac{1560.73}{35}} = 6''.68$			1560.73

A.—GAMBEY No. 2.—Tangent screw turned to the right.

TABLE 1.—Determination of angular distance of verniers.

I.			II.			B—A.			Δ.	Σ					
A.		B.	A.		B.	I.	II.	Mean.							
°	'	"	°	'	"	"	"	"	"	"					
00	00	00	05	180	00	08	+	.05	+	08	+	06.5	+	1.4	1.4
10	00	00	10	190	00	08		.10		08	+	09.0	+	4.9	24.1
20	00	00	08	200	00	03		.08		03	+	05.0	+	0.4	0.4
30	00	00	05	210	00	05		.05		05		05.0	—	0.1	0.1
40	00	00	00	220	00	05		.00		05		02.5	—	2.6	6.7
50	00	00	05	230	00	10		.05		10	+	07.5	+	2.4	4.4
60	00	00	03	240	00	10	+	.03		10	+	06.5	+	1.4	1.9
70	00	00	00	250	00	10		.00		10		05.0	—	0.1	0.1
80	00	00	58	260	00	08	—	.02		08		03.0	—	2.1	4.4
90	00	00	00	270	00	08		.00		08		04.5	—	1.1	1.2
100	00	00	00	280	00	05		.00		05		02.5	—	2.6	6.7
110	00	00	00	290	00	05		.00		05		02.5	—	2.6	6.7
120	00	00	05	300	00	08	+	.05		08	+	06.5	+	1.4	1.9
130	00	00	57	310	00	08	—	.03		08		02.5	—	2.6	6.7
140	00	00	02	320	00	10	+	.02		10	+	06.0	+	0.9	0.9
150	00	00	05	330	00	07		.05		07	+	06.0	+	0.9	0.9
160	00	00	07	340	00	05		.07		05	+	06.0	+	0.9	0.9
170	00	.00	05	350	00	05	+	.05		05	+	05.0	—	0.1	0.1

Angular distance of verniers 180° 00' 05".1.

18) 91.5

17) 70.01

+ 5.1

m<sup>2</sup> = 4.12  
m = 2.02

A.—GAMBEY No. 2.—Tangent screw turned to the right.

TABLE 2.—Determination of eccentricity.

r.	I. u + m.	II. u + m.	$\frac{11-1.}{2}=s$ .	Sin r.	Cos r.	s sin r.	s cos r.
°	"	"	"				
00	-- 0.1	+ 2.9	-- 1.5	0.00	1.00	0.00	-- 1.32
10	+ 4.9	+ 2.9	+ 1.0	.17	.98	+ 0.17	+ 0.94
20	+ 2.9	-- 2.1	+ 2.5	.34	.94	+ 0.85	+ 2.35
30	-- 0.1	-- 0.1	0.0	.50	.87	0.00	0.10
40	-- 5.1	-- 0.1	-- 2.5	.64	.76	-- 1.60	-- 1.90
50	-- 0.1	+ 4.9	-- 2.5	.76	.64	-- 1.90	-- 1.60
60	-- 2.1	+ 4.9	-- 3.5	.87	.50	-- 3.05	-- 1.75
70	-- 5.1	-- 4.9	-- 5.0	.94	.34	-- 4.70	-- 1.70
80	-- 7.1	+ 2.9	-- 5.0	.98	.17	-- 4.90	-- 0.85
90	-- 5.1	+ 2.9	-- 5.0	1.00	.00	-- 5.00	0.10
100	-- 5.1	-- 0.1	-- 2.5	.98	-- .17	-- 2.45	+ 0.42
110	-- 5.1	-- 0.1	-- 2.5	.94	-- .34	-- 2.35	+ 0.85
120	-- 0.1	+ 2.9	-- 1.5	.87	-- .50	-- 1.31	+ 0.75
130	-- 8.1	+ 2.9	-- 5.5	.76	-- .64	-- 4.18	+ 3.32
140	-- 3.1	+ 4.9	-- 4.0	.64	-- .76	-- 2.56	+ 3.04
150	-- 0.1	+ 1.9	-- 1.0	.50	-- .87	-- 0.50	+ 0.85
160	+ 1.9	-- 0.1	+ 1.0	.34	-- .94	+ 0.34	-- 0.94
170	-- 0.1	-- 0.1	0.0	.17	-- .98	0.00	0.00

Angle of eccentricity = 355°.  
Eccentricity =  $\epsilon$  = 1".8.

+ 1.26    + 12.79  
— 34.50    — 10.24  
— 33.14    + 2.54

A.—GAMBEY No. 2.—Tangent screw turned to the right.  
TABLE 3.—*Residual errors of graduation and reading.*

— ρ.	Sin r—ρ.	2e sin r—ρ.	r.	m.	m².	r.	m.	m².
o		"	o	"	.	o	"	
355	— .087	— 0.3	00	+ 0.2	0.04	180	+ 2.6	6.76
345	— .259	— 0.9	10	+ 5.8	33.64	190	+ 2.0	4.00
335	— .423	— 1.5	20	+ 4.4	19.36	200	— 3.6	12.96
325	— .573	— 2.1	30	+ 2.0	4.00	210	— 2.2	4.84
315	— .707	— 2.5	40	— 2.6	6.76	220	— 2.6	6.76
305	— .819	— 2.9	50	+ 2.8	7.84	230	+ 2.0	4.00
295	— .906	— 3.3	60	+ 1.2	1.44	240	+ 1.6	2.56
285	— .966	— 3.6	70	— 1.6	2.56	250	+ 1.3	1.69
275	— .996	— 3.6	80	— 3.5	12.25	260	— 0.7	0.49
265	— .996	— 3.6	90	— 1.5	2.25	270	— 0.7	0.49
255	— .966	— 3.6	100	— 1.5	2.25	280	— 3.7	13.69
245	— .906	— 3.3	110	— 1.8	3.24	290	— 3.4	11.56
235	— .819	— 2.9	120	+ 2.8	7.84	300	0.0	0.00
225	— .707	— 2.5	130	— 5.6	31.36	310	+ 0.4	0.16
215	— .573	— 2.1	140	— 1.0	1.00	320	+ 2.7	7.29
205	— .423	— 1.5	150	— 1.4	1.96	330	+ 0.4	0.16
195	— .259	— 0.9	160	+ 2.8	7.84	340	— 1.0	1.00
185	— .087	— 0.3	170	+ 0.2	0.04	350	— 0.4	0.16
Probable error of 1 observation = 0".57.					145.77	0.80		78.57
					$\sqrt{\frac{224.34}{35}}$			145.77
								224.34

A.—GAMBEY No. 2.—Tangent screw turned to the left.  
TABLE 1.—*Determination of angular distance of verniers.*

I.				II.				B — A.			Δ.	Δ².
A.		B.		A.		B.		I.	II.	Mean.		
o	"	"	"	o	"	"	"	"	"	"	"	"
00	00	00	05	180	00	00	10	+ 05	+ 10	+ 07.5	+ 0.7	0.49
10	00	00	05	190	00	00	10	05	10	07.5	+ 0.7	0.49
20	00	00	05	200	00	00	10	05	10	07.5	+ 0.7	0.49
30	00	00	10	210	00	00	10	10	10	10.0	+ 3.2	10.24
40	00	00	07	220	00	00	10	07	10	08.5	+ 1.7	2.89
50	00	00	10	230	00	00	05	10	05	07.5	+ 0.7	0.49
60	00	00	10	240	00	00	05	10	05	07.5	+ 0.7	0.49
70	00	00	10	250	00	00	05	10	05	07.5	+ 0.7	0.49
80	00	00	10	260	00	00	00	10	00	05.0	— 1.8	3.24
90	00	00	10	270	00	00	00	10	00	05.0	— 1.8	3.24
100	00	00	10	280	00	00	02	10	02	06.0	— 0.8	0.64
110	00	00	12	290	00	00	05	12	05	08.5	+ 1.7	2.89
120	00	00	10	300	00	00	00	10	00	05.0	— 1.8	3.24
130	00	00	10	310	00	00	00	10	00	05.0	— 1.8	3.24
140	00	00	10	320	00	00	00	10	00	05.0	— 1.8	3.24
150	00	00	15	330	00	00	05	15	05	07.5	+ 0.7	0.49
160	00	00	10	340	00	00	05	10	05	07.5	+ 0.7	0.49
170	00	00	10	350	00	00	00	+ 10	+ 00	+ 05.0	— 1.8	3.24
Angular distance of verniers, 180° 00' 06".										18) 123.0	17) 40.02	
										+ 6.8	$m^s = 2.35$ $m = 1.53$	

A.—GAMBEY No. 2.—Tangent screw turned to the left.

TABLE 2.—Determination of eccentricity.

<i>r.</i>	I. <i>u + m.</i>	II. <i>u + m.</i>	$\frac{1-11.}{2} = s.$	Sin <i>r.</i>	Cos <i>r.</i>	<i>s</i> sin <i>r.</i>	<i>s</i> cos <i>r.</i>
°	"	"	"				
00	— 1.8	+ 3.2	— 2.5	0.00	1.00	0.0	— 2.5
10	— 1.8	+ 3.2	— 2.5	.17	.98	— 0.4	— 2.1
20	— 1.8	+ 3.2	— 2.5	.34	.94	— 0.8	— 2.3
30	+ 3.2	+ 3.2	0.0	.50	.87	0.0	0.0
40	+ 0.2	+ 3.2	— 1.5	.64	.76	— 1.0	— 1.1
50	+ 3.2	— 1.8	+ 2.5	.76	.64	+ 1.9	+ 1.6
60	+ 3.2	— 1.8	+ 2.5	.87	.50	+ 2.2	+ 1.3
70	+ 3.2	— 1.8	+ 2.5	.94	.34	+ 2.3	+ 0.5
80	+ 3.2	— 6.8	+ 5.0	.98	.17	+ 4.9	+ 0.2
90	+ 3.2	— 6.8	+ 5.0	1.00	.00	+ 5.0	0.0
100	+ 3.2	— 4.8	+ 4.0	.98	— .17	+ 3.9	— 0.7
110	+ 5.2	— 1.8	+ 3.5	.94	— .34	+ 3.3	— 1.2
120	+ 3.2	— 6.8	+ 5.0	.87	— .50	+ 4.3	— 2.5
130	+ 3.2	— 6.8	+ 5.0	.76	— .64	+ 3.8	— 3.2
140	+ 3.2	— 6.8	+ 5.0	.64	— .76	+ 3.2	— 3.5
150	+ 8.2	— 1.8	+ 5.0	.50	— .87	+ 2.5	— 4.3
160	+ 3.2	— 1.8	+ 2.5	.34	— .94	+ 0.8	— 2.3
170	+ 3.2	— 6.8	+ 5.0	.17	— .98	+ 0.8	— 4.9
Angle of eccentricity = 144°. Eccentricity = <i>e</i> = 2".5.						+ 33.9 — 2.2	+ 4.1 — 31.2
						+ 36.7	— 26.5

A.—GAMBEY No. 2.—Tangent screw turned to the left.

TABLE 3.—Residual errors of graduation and readings.

$r-\rho.$	Sin $r-\rho.$	Sin $r-\rho.$	$r.$	$m.$	$m^2.$	$r.$	$m.$	$m^2.$
°	"	"	"	"		°	"	
144	+ .588	+ 2.9	00	— 4.7	22.09	180	+ 6.1	37.21
134	.719	3.6	10	— 5.4	29.16	190	+ 6.8	46.24
124	.829	4.1	20	— 5.9	34.81	200	— 7.3	53.29
114	.913	4.5	30	— 1.3	1.69	210	— 7.7	59.29
104	.970	4.8	40	— 4.6	21.16	220	— 8.0	64.00
94	.997	4.9	50	— 1.7	2.89	230	+ 3.1	9.61
84	.994	4.9	60	— 1.7	2.89	240	+ 3.1	9.61
74	.961	4.8	70	— 1.6	2.56	250	+ 3.0	9.00
64	.898	4.5	80	— 1.3	1.69	260	— 2.2	4.84
54	.809	4.0	90	— 0.8	0.64	270	— 2.8	7.84
44	.695	3.4	100	— 0.2	0.04	280	— 1.4	1.96
34	.559	2.8	110	+ 2.4	5.76	290	+ 1.0	1.00
24	.407	2.0	120	+ 1.2	1.44	300	— 4.8	23.04
14	.292	1.4	130	+ 1.6	2.56	310	— 5.4	29.16
04	+ .070	+ 0.3	140	+ 2.9	8.41	320	— 6.5	42.25
06	— .104	— 0.5	150	+ 8.8	77.44	330	— 2.3	5.29
16	— .275	— 1.3	160	+ 4.5	20.25	340	— 3.1	9.61
26	— .438	— 2.2	170	+ 5.4	29.16	350	— 9.0	81.00
Probable error of 1 observation = 3".29.					264.36 $\sqrt{\frac{758.87}{35}} = 4".66$	494.24 264.03 <hr/> 758.27		





A.—WÜRDEMANN No. 86.—Tangent screw turned to the right.

TABLE 3.—Residual errors of graduation and reading.

$r-\rho.$	$\sin r-\rho.$	$2\epsilon \sin r-\rho.$	$r.$	$m.$	$m^2.$	$r.$	$m.$	$m^2.$
0		"	0			0		
97	+ .992	+ 3.07	0	— 0.6	0.36	180	+ 2.6	6.76
87	+ .998	+ 3.09	10	— 3.6	12.96	190	+ 2.6	6.76
77	+ .974	+ 3.02	20	+ 1.5	2.25	200	+ 0.5	0.25
67	+ .920	+ 2.85	30	— 3.3	10.09	210	+ 2.4	5.76
57	+ .838	+ 2.60	40	— 3.1	9.61	220	+ 0.1	0.01
47	+ .731	+ 2.26	50	— 6.8	46.24	230	— 0.2	0.04
37	+ .602	+ 1.86	60	— 4.4	19.36	240	+ 4.4	19.36
27	+ .454	+ 1.39	70	— 6.9	47.61	250	+ 3.9	15.21
17	+ .292	+ 0.90	80	— 6.4	40.96	260	+ 13.4	179.56
7	+ .122	+ 0.37	90	— 0.9	0.81	270	— 2.1	4.41
3	— .052	— 0.15	100	+ 2.7	7.29	280	+ 2.4	5.76
13	— .225	— 0.68	110	— 1.8	3.24	290	— 3.2	10.24
23	— .390	— 1.20	120	+ 3.7	13.69	300	— 6.7	44.89
33	— .545	— 1.67	130	— 0.8	0.64	310	— 4.2	17.64
43	— .669	— 2.07	140	+ 16.6	275.56	320	— 7.6	57.76
53	— .798	— 2.48	150	+ 5.0	25.00	330	— 5.0	25.00
63	— .891	— 2.76	160	+ 18.3	334.89	340	— 8.3	68.89
73	— .956	— 2.96	170	+ 7.5	56.25	350	— 10.5	110.25
Probable error of 1 observation = 4".88.					906.81			745.55
					$\sqrt{\frac{1655.36}{35}}=06''.9$			906.81
								1655.36

A.—WÜRDEMANN No. 86.—Tangent screw turned to the left.

TABLE 1.—Determination of the angular distance of verniers.

I.				II.				B—A.			Δ.	Δ².
A.		B.		A.		B.		I.	II.	Mean.		
°	'	"	"	°	'	"	"	"	"	"	"	"
00	00	00	43	180	00	00	07	— 17	— 03	— 10.0	+ 3.3	10.89
10	00	00	43	190	00	00	00	17	00	8.5	+ 1.8	3.24
20	00	00	45	200	00	00	55	15	05	10.0	+ 3.3	10.89
30	00	00	48	210	00	00	53	12	07	9.5	+ 2.8	7.84
40	00	00	45	220	00	00	00	15	00	7.5	+ 0.8	0.64
50	00	00	45	230	00	00	55	15	05	10.0	+ 3.3	10.89
60	00	00	45	240	00	00	55	15	05	10.0	+ 3.3	10.89
70	00	00	50	250	00	00	00	10	00	05.0	— 1.7	2.89
80	00	00	55	260	00	00	55	05	05	05.0	— 1.7	2.89
90	00	00	00	270	00	00	52	00	08	4.0	— 2.7	7.29
100	00	00	58	280	00	00	48	02	12	7.0	+ 0.3	0.09
110	00	00	00	290	00	00	45	— 00	15	7.5	+ 0.8	0.64
120	00	00	08	300	00	00	43	+ 08	17	4.5	— 2.2	4.84
130	00	00	05	310	00	00	48	05	12	3.5	— 3.2	10.24
140	00	00	05	320	00	00	45	05	15	5.0	— 1.7	2.89
150	00	00	03	330	00	00	50	03	10	3.5	— 3.2	10.24
160	00	00	05	340	00	00	45	05	15	5.0	— 1.7	2.89
170	00	00	05	350	00	00	45	+ 05	— 15	— 5.0	— 1.7	2.89

Angular distance of verniers, 179° 59' 53".3.

18) 120.5  
— 06.7

17) 103.07  
— 6.16  
— 2.45

A.—WÜRDEMANN No. 86.—Tangent screw turned to the left.

TABLE 2.—Determination of eccentricity.

$r.$	I. $u + m.$	II. $u + m.$	$\frac{1-11.}{2} = s.$	Sin $r.$	Cos $r.$	$s$ sin $r.$	$s$ cos $r.$
0	"	"	"				
00	— 10.3	+ 3.7	— 7.0	.00	1.00	0.00	— 7.00
10	— 10.3	+ 6.7	— 8.5	.17	.98	— 1.45	— 8.33
20	— 8.3	+ 1.7	— 5.0	.34	.94	— 1.70	— 4.70
30	— 5.3	— 0.3	— 2.5	.50	.87	— 1.25	— 2.17
40	— 8.3	+ 6.7	— 7.5	.64	.76	— 4.80	— 5.70
50	— 8.3	+ 1.7	— 5.0	.76	.64	— 3.80	— 3.20
60	— 8.3	+ 1.7	— 5.0	.87	.50	— 4.35	— 2.50
70	— 3.3	+ 6.7	— 5.0	.94	.34	— 4.70	— 1.70
80	+ 1.7	+ 1.7	0.0	.98	.17	0.00	0.00
90	+ 6.7	— 1.3	+ 4.0	1.00	.00	+ 4.00	0.00
100	+ 4.7	— 5.3	+ 5.0	.98	— .17	+ 4.70	— 0.85
110	+ 6.7	— 8.3	+ 7.5	.94	— .34	+ 6.75	— 2.55
120	— 1.3	— 10.3	+ 4.5	.87	— .50	+ 3.91	— 2.55
130	+ 1.7	— 5.3	+ 3.5	.76	— .64	+ 2.66	— 2.24
140	+ 1.7	— 8.3	+ 5.0	.64	— .76	+ 3.20	— 3.80
150	+ 3.7	— 3.3	+ 3.5	.50	— .87	+ 1.75	— 2.95
160	+ 1.7	— 8.3	+ 5.0	.34	— .94	+ 1.70	— 4.70
170	+ 1.7	— 8.3	+ 5.0	.17	— .98	+ 0.85	— 4.90
Angle of eccentricity = $97^{\circ}$ . Eccentricity = $\epsilon = 03''.5$ .						+ 29.52 — 22.05  + 7.47	— 59.54

A.—WÜRDEMANN No. 86.—Tangent screw turned to the left.

TABLE 3.—Residual errors of graduation and reading.

$r - \rho.$	Sin. $r - \rho.$	$2 \epsilon$ sin. $r - \rho.$	$r.$	$m.$	$m^2.$	$r.$	$m.$	$m^2.$
0		"	0	"		0	"	
97	+ .993	+ 6.9	00	— 17.2	295.84	180	— 10.6	112.36
87	.999	7.0	10	— 17.3	299.29	190	+ 13.7	187.69
77	.974	6.8	20	— 15.1	228.01	200	+ 8.5	72.25
67	.921	6.4	30	— 9.7	94.09	210	+ 6.1	37.21
57	.839	5.8	40	— 14.1	198.81	220	+ 12.5	156.25
47	.731	4.4	50	— 12.7	161.29	230	+ 6.1	37.21
37	.602	4.2	60	— 12.5	156.25	240	+ 5.9	34.81
27	.454	3.1	70	— 6.4	40.96	250	+ 9.8	96.04
17	.292	2.0	80	— 0.3	0.90	260	+ 3.7	13.69
07	+ .122	+ 0.8	90	+ 5.9	34.81	270	+ 0.5	0.25
3	— .052	— 0.4	100	+ 5.1	26.01	280	+ 5.7	32.49
13	.225	1.6	110	+ 8.3	68.89	290	— 9.9	98.01
23	.391	2.7	120	+ 1.4	1.96	300	— 13.0	169.00
33	.545	3.8	130	+ 5.5	30.25	310	— 9.1	82.81
43	.682	4.8	140	+ 6.5	42.25	320	— 13.1	171.61
53	.799	5.6	150	+ 9.3	86.49	330	— 8.9	79.21
63	.891	6.2	160	+ 7.9	62.41	340	— 14.5	210.25
73	— .956	— 6.8	170	+ 8.5	72.25	350	— 15.1	228.01
Probable error of 1 observation = $7''.28$ .					1900.76 $\sqrt{\frac{3719.92}{35}} = 10.30$			1819.16 1900.76 <hr/> 3719.92

B.—FIRST ANGLE.—*Determination of probable error and range.*

Setting.	Gambey No. 1, 10 inch.		Würd. No. 65, 10 inch.		Gambey No. 2, 6 inch.		Würd. No. 86, 10½ inch.	
	Angle, 43° 34'.	Differences from mean.	Angle, 43° 34'.	Differences from mean.	Angle, 43° 33'.	Differences from mean.	Angle, 43° 33'.	Differences from mean.
°	"	"	"	"	"	"	"	"
00.	03.0	—5.2	26.5	+3.3	56.0	—7.1	70.5	+1.3
20.	13.0	+5.8	25.0	+1.8	70.0	+6.9	65.0	—3.5
40.	08.5	+0.3	23.5	+0.3	70.0	+6.9	59.0	—9.6
60.	04.5	—3.7	10.0	—13.2	65.0	+1.9	89.5	—11.9
80.	08.5	+0.3	03.5	—19.7	62.5	—0.6	67.5	—1.1
100.	15.5	+7.3	11.5	—11.7	57.5	—5.6	57.5	—1.1
120.	12.5	+4.3	20.0	—3.2	62.5	—0.6	55.0	—11.5
140.	11.5	+3.3	16.5	—6.7	57.5	—5.6	45.5	—21.1
160.	06.5	—1.7	24.5	+1.3	64.0	+0.9	75.0	+6.4
180.	09.5	+1.3	36.5	+13.3	64.0	+0.9	73.5	+4.9
200.	12.0	+3.8	37.5	+14.3	67.5	+4.4	63.5	—5.1
220.	07.5	—0.7	32.5	+09.3	70.0	+6.9	64.0	—4.6
240.	09.0	+0.8	17.5	—05.7	66.5	+3.4	76.5	+7.5
260.	03.5	—4.7	17.5	—5.7	56.5	—6.6	80.0	+11.4
280.	06.5	—1.7	20.0	—3.2	69.0	+5.9	76.0	+7.4
300.	02.0	—6.2	16.5	—6.7	62.5	—0.6	62.5	—6.1
320.	11.0	+2.8	37.5	+14.3	57.5	—5.6	77.5	+2.9
340.	03.5	—4.7	40.5	+17.3	57.5	—5.6	86.0	—17.4
Sums.....	147.0	54.6	417.0	149.0	1136.0	76.0	1235.0	156.0
Means.....	08.2	.....	23.2	.....	63.1	.....	68.6	.....
Range.....	.....	13.5	.....	37.0	.....	14.0	.....	41.5
Prob'le error.....	.....	2.64	.....	7.20	.....	3.67	.....	7.54

B.—SECOND ANGLE.—*Determination of probable error and range.*

Setting.	Gambey No. 1.		Würdemann No. 65.		Gambey No. 2.		Würdemann No. 86.	
	Angle, 32° 51'.	Differences from mean.	Angle, 32° 51'.	Differences from mean.	Angle, 32° 51'.	Differences from mean.	Angle, 32° 51'.	Differences from mean.
°	"	"	"	"	"	"	"	"
00.	21.0	+1.5	16.0	—0.5	21.5	—0.9	19.0	—1.0
20.	16.0	—3.5	22.5	+6.0	27.5	+5.1	25.0	—5.0
40.	21.0	+1.5	12.5	—4.0	22.0	—0.4	32.5	+12.5
60.	23.0	+3.5	25.5	+9.0	20.0	—2.4	16.0	—4.0
80.	19.0	—0.5	12.5	—4.0	25.0	+2.6	19.0	—1.0
100.	22.0	+2.5	15.0	—1.5	27.5	+5.1	27.0	+7.0
120.	16.0	—3.5	18.5	+2.0	24.5	+2.1	25.0	—5.0
140.	16.5	—3.0	11.0	—5.5	12.5	—9.9	24.5	+4.5
160.	23.0	+3.5	19.0	+3.0	32.5	+10.1	10.0	—10.0
180.	22.5	+3.0	22.0	+5.5	25.5	+3.1	17.5	—2.5
200.	17.2	—2.3	09.0	—7.0	24.0	+1.6	20.0	0.0
220.	17.5	—2.0	21.0	+4.5	20.0	—2.4	21.0	+1.0
240.	21.5	+2.0	17.5	+1.0	17.5	—4.9	15.0	—5.0
260.	22.5	+3.0	17.5	+1.0	16.0	—6.4	24.5	+4.5
280.	19.0	—0.5	15.0	—1.5	16.0	—6.4	16.5	—3.5
300.	18.0	—1.5	23.5	+7.0	22.0	—0.4	29.0	+9.0
320.	18.0	—1.5	15.0	—1.5	25.0	+2.6	09.0	—11.0
340.	17.5	—2.0	04.5	—12.0	25.0	+2.6	10.0	—10.0
Sums.....	351.2	40.7	297.5	77.0	404.0	69.2	360.5	96.5
Means.....	19.5	.....	16.5	.....	22.4	.....	20.0	.....
Range.....	.....	7.0	.....	21.5	.....	20.0	.....	23.7
Prob'le error.....	.....	1.97	.....	3.72	.....	3.08	.....	4.66

B.—THIRD ANGLE.—*Determination of probable error and range.*

Setting.	Gambey No. 1.		Würdemann No. 65.		Gambey No. 2.		Würdemann No. 86.	
	Angle, 49° 02'.	Differences from mean.	Angle, 49° 01'.	Differences from mean.	Angle, 49° 01'.	Differences from mean.	Angle, 49° 01'.	Differences from mean.
°	"	"	"	"	"	"	"	"
00.	09. 0	—1. 9	65. 5	— 2. 0	67. 5	+ 3. 1	62. 5	— 8. 9
20.	06. 5	—4. 4	57. 5	—10. 0	70. 0	+ 5. 6	68. 0	— 3. 4
40.	10. 5	—0. 4	56. 5	—11. 0	68. 0	+ 3. 6	51. 5	—19. 9
60.	14. 0	+3. 1	61. 0	— 6. 5	58. 5	— 5. 9	73. 5	+ 2. 1
80.	07. 5	—3. 4	72. 5	+ 5. 0	62. 5	— 1. 9	73. 5	+ 2. 1
100.	09. 5	—1. 4	67. 5	0. 0	68. 0	+ 3. 6	71. 5	+ 0. 1
120.	11. 5	+0. 6	70. 5	+ 3. 0	75. 0	+10. 6	62. 5	— 8. 9
140.	05. 5	—5. 4	77. 5	+10. 0	67. 5	+ 3. 1	72. 5	+ 1. 1
160.	08. 2	—2. 7	61. 5	— 6. 0	69. 0	+ 4. 6	80. 0	+ 8. 6
180.	06. 5	—4. 4	67. 5	0. 0	68. 5	+ 4. 1	75. 0	+ 3. 6
200.	10. 0	—0. 9	64. 5	— 3. 0	62. 5	— 1. 9	79. 0	+ 7. 6
220.	16. 3	+5. 4	64. 0	— 3. 5	59. 0	— 5. 4	89. 0	+17. 6
240.	08. 5	—2. 4	77. 5	+10. 0	61. 0	— 3. 4	76. 0	+ 4. 6
260.	12. 5	+1. 6	74. 0	+ 6. 5	65. 5	+ 1. 1	63. 0	— 8. 4
280.	18. 5	+ 7. 6	67. 5	0. 0	57. 5	— 6. 9	61. 0	— 7. 4
300.	13. 0	+2. 1	62. 5	— 5. 0	60. 0	— 4. 4	65. 0	— 6. 4
320.	15. 0	+4. 1	66. 0	— 1. 5	57. 5	— 6. 9	73. 5	+ 2. 1
340.	13. 5	+2. 6	81. 5	+14. 0	62. 5	— 1. 9	85. 0	+13. 6
Sums . . . . .	196. 0	54. 1	1215. 0	97. 5	1160. 0	78. 0	1285. 0	126. 5
Means . . . . .	10. 9	.....	67. 5	.....	64. 4	.....	71. 4	.....
Range . . . . .	.....	13. 0	.....	25. 0	.....	17. 5	.....	37. 5
Prob. error ..	.....	2. 61	.....	4. 71	.....	3. 77	.....	6. 11

B.—FOURTH ANGLE.—*Determination of probable error and range.*

Setting.	Gambey No. 1.		Würdemann No. 65.		Gambey No. 2.		Würdemann No. 86.	
	Angle, 25° 06'.	Differences from mean.	Angle, 25° 06'.	Differences from mean.	Angle, 25° 06'.	Differences from mean.	Angle, 25° 06'.	Differences from mean.
°	"	"	"	"	"	"	"	"
00.	50. 0	+2. 2	49. 5	— 1. 2	47. 5	— 0. 5	53. 5	+03. 5
20.	52. 5	+4. 7	62. 5	+11. 8	42. 0	— 6. 0	53. 5	+ 3. 5
40.	46. 0	—1. 8	62. 5	+17. 8	43. 7	— 4. 3	68. 5	+18. 5
60.	50. 0	+2. 2	58. 5	+ 7. 8	54. 0	+ 6. 0	58. 0	+ 8. 0
80.	46. 0	—1. 8	40. 0	—10. 7	52. 5	+ 4. 5	40. 0	—10. 0
100.	47. 5	—0. 3	48. 5	— 2. 2	50. 0	+ 2. 0	53. 5	+ 3. 5
120.	50. 0	+2. 2	47. 0	— 3. 7	52. 5	+ 4. 5	65. 0	+15. 0
140.	46. 8	—1. 0	39. 0	—11. 7	50. 0	+ 2. 0	52. 5	+ 2. 5
160.	51. 0	+3. 2	63. 5	+12. 5	47. 5	— 0. 5	55. 0	+ 5. 0
180.	45. 0	—2. 8	49. 0	— 1. 7	40. 5	— 7. 5	50. 0	0. 0
200.	46. 5	—1. 3	52. 5	+ 1. 8	40. 0	— 8. 0	58. 5	+ 8. 5
220.	46. 5	—1. 3	57. 5	+ 6. 8	44. 5	— 3. 5	32. 5	—17. 5
240.	52. 5	+4. 7	37. 5	—13. 2	47. 5	— 0. 5	42. 5	— 7. 5
260.	44. 0	—3. 8	51. 0	+03. 0	46. 5	— 1. 5	41. 5	— 8. 5
280.	44. 0	—3. 8	47. 5	— 3. 2	42. 5	— 5. 5	55. 0	+ 5. 0
300.	50. 0	+2. 2	54. 0	+ 3. 2	50. 0	+ 2. 0	48. 5	— 1. 5
320.	44. 5	—2. 3	46. 5	— 4. 2	60. 0	+12. 0	45. 0	— 5. 0
340.	45. 5	—1. 3	40. 0	—10. 7	52. 5	+ 4. 5	26. 5	—23. 5
Sums . . . . .	858. 3	42. 9	912. 5	124. 9	863. 7	75. 3	899. 5	146. 5
Means . . . . .	47. 8	.....	50. 7	.....	48. 0	.....	50. 0	.....
Range . . . . .	.....	8. 5	.....	31. 0	.....	20. 0	.....	42. 0
Prob. error ..	.....	2. 7	.....	6. 04	.....	3. 63	.....	7. 08

B.—FIFTH ANGLE.—*Determination of probable error and range.*

Setting.	Gambey No. 1.		Würdemann No. 65.		Gambey No. 2.		Würdemann No. 86.	
	Angle, 73° 35'.	Differences from mean.	Angle, 73° 35'.	Differences from mean.	Angle 73° 35'.	Differences from mean.	Angle, 73° 35'.	Differences from mean.
0	"	"	"	"	"	"	"	"
00.	32.5	— 6.0	30.0	— 3.7	37.5	+ 2.9	51.5	+12.6
20.	35.0	— 3.5	27.5	— 6.2	35.5	+ 0.9	33.5	+ 1.6
40.	34.5	— 4.0	25.0	— 8.5	36.3	+ 1.7	32.5	+ 0.6
60.	29.0	— 9.5	22.5	—11.2	40.0	+ 5.4	34.5	+ 2.6
80.	40.0	+ 1.5	45.0	+11.3	30.0	— 4.6	37.5	— 5.6
100.	42.0	+ 3.5	42.5	+ 8.8	32.5	— 2.1	27.5	— 4.4
120.	44.5	+ 6.0	30.0	— 3.7	41.0	+ 6.4	35.0	— 3.1
140.	40.0	+ 1.5	41.0	+ 7.7	32.5	— 2.1	42.5	+12.6
160.	42.5	+ 4.0	27.5	— 6.2	36.5	+ 1.9	34.0	+ 2.1
180.	36.5	— 2.0	26.5	— 7.2	27.0	— 7.6	37.5	+ 2.6
200.	41.0	+ 2.5	45.5	+11.8	37.0	+ 2.4	27.5	— 4.4
220.	40.0	+ 1.5	30.0	— 3.7	39.0	+ 4.4	23.5	— 2.4
240.	41.5	+ 2.5	47.5	+13.8	42.0	+ 7.4	17.5	—14.4
260.	35.0	— 3.5	20.5	—13.2	40.0	+ 5.4	53.5	+ 1.6
280.	37.5	— 1.0	32.5	— 1.2	35.0	+ 0.4	13.5	—12.4
300.	37.5	— 1.0	36.0	+ 2.3	32.5	— 2.1	25.0	— 6.9
320.	45.0	+ 6.5	35.0	+ 1.3	23.5	—11.1	27.5	— 4.4
340.	40.0	+ 1.5	42.5	+ 8.8	25.0	— 9.6	39.5	+ 7.6
Sums.....	694.0	60.5	607.0	130.6	622.8	78.4	573.5	121.9
Means.....	38.5	.....	33.7	.....	34.6	.....	31.9	.....
Range.....	.....	16.0	.....	37.0	.....	18.5	.....	32.0
Prob. error ..	.....	2.92	.....	6.31	.....	3.79	.....	5.92

B.—SIXTH ANGLE.—*Determination of probable error and range.*

Setting.	Gambey No. 1.		Würdemann No. 65.		Gambey No. 2.		Würdemann No. 86.	
	Angle, 32° 53'.	Differences from mean.	Angle, 32° 53'.	Differences from mean.	Angle, 32° 53'.	Differences from mean.	Angle, 32° 53'.	Differences from mean.
0	"	"	"	"	"	"	"	"
00.	39.0	+ 1.8	56.5	+14.2	35.0	— 6.0	36.0	—10.1
20.	40.5	+ 3.3	32.5	— 9.8	40.0	— 1.0	30.0	—16.1
40.	40.5	+ 3.3	41.5	— 0.8	32.5	— 8.5	43.0	— 1.1
60.	37.5	+ 0.3	54.0	+11.7	37.5	— 3.5	37.5	— 8.6
80.	40.0	+ 2.8	45.0	+ 2.7	42.0	+ 1.0	49.0	+ 2.9
100.	41.5	+ 4.3	44.0	+ 1.7	43.5	+ 2.5	55.0	+ 2.9
120.	35.0	— 2.2	46.0	+ 3.7	40.0	— 1.0	45.0	— 1.1
140.	36.0	— 1.0	37.5	— 4.8	32.5	— 8.5	35.0	—11.1
160.	35.5	— 1.7	34.0	— 8.3	37.5	— 3.5	43.5	— 2.6
180.	31.5	— 5.7	40.0	— 2.3	52.5	+11.5	40.0	— 6.1
200.	33.5	— 3.7	22.0	—20.3	47.5	+ 6.5	49.0	— 2.9
220.	36.0	— 1.2	51.0	+ 8.7	47.5	+ 6.5	55.0	+ 8.9
240.	35.0	— 2.2	43.5	+ 1.2	39.0	— 2.0	57.5	+11.4
260.	37.5	+ 0.3	47.5	+ 5.2	42.5	+ 1.5	51.0	+ 4.9
280.	36.0	— 1.2	45.5	+ 0.2	30.0	—11.0	57.5	+11.4
300.	37.0	— 0.2	48.5	+ 6.2	47.5	+ 6.5	55.5	+ 9.4
320.	36.5	— 0.7	40.0	— 2.3	44.0	+ 3.0	37.5	— 8.6
340.	42.0	+ 4.8	35.0	— 7.3	47.5	+ 6.5	51.5	+ 5.4
Sums.....	670.5	40.7	761.0	111.4	738.5	90.5	830.5	131.5
Means.....	37.2	.....	42.3	.....	41.0	.....	46.1	.....
Range.....	.....	10.5	.....	34.5	.....	22.5	.....	27.5
Prob. error ..	.....	1.97	.....	5.38	.....	4.37	.....	6.36

B.—SEVENTH ANGLE.—*Determination of probable error and range.*

Setting.	Gambey No. 1.		Würdemann No. 65.		Gambey No. 2.		Würdemann No. 86.	
	Angle, 84° 00'.	Differences from mean.	Angle, 84° 00'.	Differences from mean.	Angle, 84° 00'.	Differences from mean.	Angle, 83° 59'.	Differences from mean.
0	"	"	"	"	"	"	"	"
00.	14.5	+ 4.8	06.5	— 9.5	12.5	+ 0.6	79.0	+10.2
20.	14.5	+ 4.5	30.5	+14.5	10.0	— 1.9	99.0	+30.2
40.	13.0	+ 3.0	26.5	+10.5	07.5	— 4.4	62.5	— 6.3
60.	13.5	+ 3.5	11.0	— 5.0	17.5	+ 5.6	72.5	+ 3.7
80.	04.5	— 5.5	05.0	—11.0	08.0	— 3.9	66.0	— 2.8
100.	07.0	— 3.0	06.0	—10.0	10.5	— 1.4	60.0	— 8.8
120.	07.5	— 2.5	15.5	— 5.0	15.0	+ 3.1	72.5	+ 3.7
140.	06.0	— 4.0	21.5	+ 5.5	17.0	+ 5.1	64.0	— 4.8
160.	09.5	— 0.5	21.0	+ 5.0	14.0	+ 2.1	66.5	— 2.3
180.	11.5	+ 1.5	23.5	+ 7.5	05.0	— 6.9	56.5	—12.3
200.	11.5	+ 1.5	26.5	+10.5	11.5	— 0.4	56.0	—12.8
220.	07.0	— 3.0	03.5	—12.5	13.5	+ 1.6	69.0	+ 0.2
240.	09.0	— 1.0	20.5	+ 4.5	14.0	+ 2.1	56.5	—12.3
260.	05.0	— 5.0	26.5	+10.5	10.0	— 1.9	67.5	— 1.3
280.	10.0	0.0	05.0	—11.0	15.0	+ 3.1	78.0	+ 9.2
300.	16.5	+ 6.5	04.0	—12.0	15.0	+ 3.1	72.0	+ 3.2
320.	12.5	+ 2.5	16.5	+ 0.5	08.5	— 3.4	79.0	+10.2
340.	07.0	— 3.0	17.5	+15.0	09.5	— 2.4	62.5	— 6.3
Sums . . . . .	180.0	55.0	287.0	142.0	204.0	53.0	1239.0	140.6
Means . . . . .	10.0	.....	16.0	.....	11.9	.....	68.8	.....
Range . . . . .	.....	12.0	.....	27.0	.....	12.5	.....	43.0
Prob. error ..	.....	2.65	.....	6.86	.....	2.56	.....	6.80

B.—EIGHTH ANGLE.—*Determination of probable error and range.*

Setting.	Gambey No. 1.		Würdemann No. 65.		Gambey No. 2.		Würdemann No. 86.	
	Angle, 18° 56'.	Differences from mean.	Angle, 18° 55'.	Differences from mean.	Angle, 18° 56'.	Differences from mean.	Angle, 18° 55'.	Differences from mean.
0	"	"	"	"	"	"	"	"
00.	10.5	+ 2.1	56.5	— 5.1	07.5	+ 0.6	58.5	— 6.9
20.	03.0	— 5.4	59.5	— 2.1	07.5	+ 0.6	47.0	+18.4
40.	06.0	— 2.4	47.0	—14.6	05.0	— 1.9	72.5	+ 7.1
60.	09.0	+ 0.6	65.0	+ 3.4	16.5	+ 9.6	72.5	+ 7.1
80.	08.0	— 0.4	70.0	+ 8.4	13.5	+ 6.6	62.5	— 2.9
100.	08.0	— 0.4	61.5	— 0.1	15.0	+ 8.1	67.5	+ 2.1
120.	12.5	+ 4.1	68.5	+ 6.9	10.0	+ 3.1	62.5	— 2.9
140.	09.5	+ 1.1	65.0	+ 3.4	12.5	+ 5.6	66.5	+ 1.1
160.	12.5	+ 4.1	72.5	+10.9	12.5	+ 5.6	61.0	— 4.4
180.	10.5	+ 2.1	51.5	+10.1	03.5	— 3.4	72.5	+ 7.1
200.	08.5	+ 0.1	66.0	+ 4.4	06.5	— 0.4	67.5	+ 2.1
220.	10.0	+ 1.6	68.0	+ 6.4	10.5	+ 3.6	67.5	+ 2.1
240.	13.0	+ 4.6	39.5	—22.1	02.5	— 4.4	63.5	— 1.9
260.	07.0	— 1.4	48.5	—13.1	00.0	— 6.9	60.5	— 4.9
280.	05.0	— 3.4	70.0	+ 8.4	02.5	— 4.4	67.0	+ 1.6
300.	06.0	— 2.4	70.0	+ 8.4	00.0	— 6.9	62.5	— 2.9
320.	05.0	— 3.4	63.5	+ 1.9	09.0	+ 2.1	81.0	+15.6
340.	07.0	— 1.4	66.0	+ 4.4	10.5	+ 3.6	65.0	— 0.4
Sums . . . . .	152.0	41.0	1108.5	134.1	124.5	76.5	1177.5	91.5
Means . . . . .	08.4	.....	61.6	.....	06.9	.....	65.4	.....
Range . . . . .	.....	10.0	.....	33.0	.....	16.5	.....	34.0
Prob. error ..	.....	2.37	.....	6.48	.....	4.30	.....	4.42



B.—FINAL RESULTS.—Sums of angles.

No. of angle.	Gambey No. 1.	Würdemann 65.	Gambey No. 2.	Würdemann 86.
	° ' "	° ' "	° ' "	° ' "
1	43 34 08.2	43 34 23.2	43 34 03.1	43 34 08.6
2	32 51 19.5	32 51 16.5	32 51 22.4	32 51 20.0
3	49 02 10.9	49 02 07.5	49 02 04.4	49 02 11.4
4	25 06 47.8	25 06 50.7	25 06 48.0	25 06 50.0
5	73 35 38.5	73 35 33.7	73 35 34.6	73 35 31.9
6	32 53 37.2	32 53 42.3	32 53 41.0	32 53 46.1
7	84 00 10.0	84 00 16.0	84 00 11.9	84 00 15.5
8	18 56 08.4	18 56 01.6	18 56 06.9	18 56 05.4
Sums.....	360 00 00.5	360 00 11.5	359 59 52.3	360 00 02.2

B.—FINAL RESULTS.—Range and probable error of all the instruments.

No. of angle.	Gambey No. 1.		Würdemann 65.		Gambey No. 2.		Würdemann 86.	
	Range.	Probable error.	Range.	Probable error.	Range.	Probable error.	Range.	Probable error.
	"	"	"	"	"	"	"	"
1	13.5	02.64	37.0	7.20	14.0	3.67	40.5	7.54
2	07.0	1.97	21.5	3.72	20.0	3.08	23.5	4.66
3	13.0	2.61	25.0	4.71	17.5	3.77	37.5	6.11
4	08.5	2.07	31.0	6.04	20.0	3.63	42.0	7.18
5	16.0	2.92	37.0	6.31	18.5	3.79	38.0	5.92
6	10.5	1.97	34.5	5.33	22.5	4.37	27.5	6.36
7	12.0	2.65	27.0	6.86	12.5	2.56	43.0	6.80
8	10.0	2.37	33.0	6.48	16.5	4.30	34.0	4.42
Means.....	11.3	2.40	30.7	5.84	17.7	3.64	35.75	6.11

C.—GENERAL SUMMARY.

	Tangent screw turned to—	Gambey No. 1.	Würdemann No. 65.	Gambey No. 2.	Würd. No. 86.
TABLES A.					
Angular distance of verniers.....	Right.....	−09".4	+ 10".0	+05".1	−12".5
Do.....	Left.....	−07".3	+ 03".17	+06".8	−06".7
Angle of eccentricity.....	Right.....	242°	340°	355°	97°
Do.....	Left.....	243	156	144	97
Eccentricity.....	Right.....	01".5	02".4	01".8	01".5
Do.....	Left.....	01".8	02".7	02".5	03".5
Probable error of 1 observation...	Right.....	02".68	04".22	00".57	04".88
Do.....	Left.....	03".02	04".72	03".29	07".28
TABLES B.					
Sum of angles = 360°.....	Right.....	+00".5	+ 11".5	− 7".7	+02".2
Mean range.....	do.....	11".3	30".7	17".4	35".7
Probable error of 1 observation...	do.....	02".4	05".84	03".64	06".11
Comparative value of observations	do.....	1.00	0.17	0.44	00.15

# REPORT

## OF

# THE CHIEF OF ORDNANCE.

ORDNANCE OFFICE, WAR DEPARTMENT,  
October 23, 1866.

SIR: I submit the following report of the principal operations of the ordnance department during the fiscal year ended June 30, 1866, with such remarks and recommendations as the interests of that branch of the military service seem to require.

The fiscal resources and the disbursements of the department during the year were as follows, viz:

Amount of appropriations in treasury, June 30, 1865.....	
Amount in government depositories to the credit of disbursing officers on same date.....	\$2,671,124 83
Amount of appropriations from June 30, 1865, to June 30, 1866, including the fixed annual appropriation for arming and equipping the militia.....	31,550,000 00
Amount received since June 30, 1865, on account of damages to arms in hands of troops, from sales of arms to officers and of condemned stores, and from all other sources not before mentioned.....	1,079,937 73
Total.....	<u>35,301,062 56</u>
Amount of expenditures since June 30, 1865.....	\$16,551,677 38
Amount in government depositories to the credit of disbursing officers June 30, 1866.....	705,580 90
Amount of appropriations in the treasury same date.....	18,043,804 28
Total.....	<u>35,301,062 56</u>

The estimate for the next fiscal year has been carefully prepared, and includes only such objects as are deemed to require early attention, as is indicated by the remarks and explanations in detail, referring to each item of the estimate and thereto appended. These explanations show the specific objects to which each item is designed to be applied and the amount of its estimated cost.

The expenditures at the arsenals have been greatly reduced during the past year, and the operations at them have been limited to the manufacture of iron sea-coast carriages and equipments and a few small-stores to meet current requisitions; to the care and preservation of the immense quantities of ordnance stores which were on hand at the conclusion of the war; to breaking up unserviceable ammunition, and to the erection of buildings at the unfinished arsenals.

The extensive fire-proof workshops at Watervliet, Frankford and Allegheny

arsenals have been completed, and are now used in part for the storage of ordnance property.

Three powder magazines, with capacity for 5,000 barrels each, have been built at St. Louis arsenal, and two more are under construction.

One magazine of the same size has been built at Washington arsenal, and one at Benicia arsenal, in addition to the two similar magazines previously built there.

Congress having at its last session made an appropriation for the purchase of sites and erecting magazines for the storage of gunpowder, a board of ordnance officers has been appointed to examine and select suitable sites, and measures will be taken to erect, early in the spring, such an additional number of magazines as will furnish secure and suitable storage for all the nitre, powder and ammunition which this department may have.

The magazines belonging to this department are entirely inadequate to the storage of the powder and ammunition on hand, and large quantities of both have been necessarily stored in temporary buildings, at arsenals and in the magazines at the principal forts, where the powder, exposed as it is to the damp atmosphere of the sea-coast, must rapidly deteriorate.

Some powder has by your authority been sold, and it is recommended that all of that obtained from breaking up ammunition, and a considerable portion of the residue, be sold or exchanged for nitre whenever fair prices can be obtained for it.

It was demonstrated during the war that with an abundant supply of nitre on hand gunpowder may be manufactured rapidly enough to meet any emergency that may arise; and as the care and preservation of gunpowder is always attended with danger, and the powder is subject to deterioration, while nitre may be kept for any period of time without impairing its quality and with perfect safety, it would seem to be wise policy to keep a very large supply of nitre and but little powder on hand.

The temporary ordnance depots which had been established during the war, and at many of which vast quantities of ordnance stores had been collected, have, with the exception of the one at Hilton Head, been broken up, and the serviceable and such unserviceable property as was worth the cost of transportation and repairs sent to arsenals. The residue has been disposed of under your instructions.

Orders for the removal of the ordnance property from Hilton Head have been given.

Baton Rouge, San Antonio, Augusta, Charleston and Mount Vernon arsenals, which were occupied by the rebels during the war, have been reoccupied by this department, but no stores have been sent to them from the northern arsenals except such as were required for immediate issue to troops. The small-arms and some of the other stores which were collected at those arsenals have been removed to northern arsenals.

The North Carolina arsenal was destroyed by Major General Sherman towards the close of the war. I do not think it advisable to rebuild it. About eighty acres of land were attached to this arsenal, which are no longer required for this department. I recommend that authority be asked of Congress to sell it, at such time and in such a manner as the Secretary of War may direct.

The workshops at Harper's Ferry armory were destroyed during the war, and since its reoccupation by this department it has been used as an ordnance depot. It is no longer needed for that purpose, and the re-establishment of the armory is not recommended. The property, which is valuable, should be sold. I have already recommended that Congress should be requested to authorize the sale of it, in such manner as the Secretary of War may direct.

The Apalachicola arsenal, in Florida, which had not been used as an arsenal for deposit or manufacture for some time previously to the war, has been temporarily transferred to the Freedmen's Bureau, by your order.

The Little Rock arsenal, in Arkansas, which was occupied by the rebels

ing the early part of the war, is now occupied by troops, the ordnance stores which were collected there after the war having been removed to St. Louis Arsenal. It is not thought necessary to maintain an arsenal at that point at this time.

At the close of the war an extensive armory and laboratory, in an unfinished state, which had been erected by the rebel authorities at Macon, Georgia, and other extensive powder-works, which had also been erected by the rebel authorities at Augusta, Georgia, were taken possession of by the United States troops, and turned over to this department. Application has recently been made by the Freedmen's Bureau for the surrender of these properties, and is now before you for your instructions in the case. Should it be decided that these properties rightfully belong to the ordnance department, measures should be taken for disposing of the armory and laboratory at Macon, and so much of the land and buildings belonging to the powder-works at Augusta as may not be required by the department. Authority to sell the land will have to be obtained from Congress.

A title to the property on Rock Island, taken possession of by the War Department for military purposes, under the act of April 19, 1864, has not yet been acquired. The commission provided for under that act has been appointed, and has entered upon its duties. As soon as a title to the property shall have been acquired, the construction of the arsenal, in accordance with the provisions of that act, will be hastened as rapidly as the state of the appropriations will admit. A considerable sum has been asked for improvements at this arsenal during the next fiscal year, but it is believed that it is necessary, and that it can be judiciously and advantageously expended.

This arsenal is designed to take the place of the Harper's Ferry armory, having been made by Congress an arsenal and armory, and hence the importance of building it up as rapidly as possible. All of the workshops may not be required for manufacturing purposes in many years, but they should be built and ready to meet any emergency that may arise. They can be used advantageously for storing ordnance property, when not required for manufacturing purposes.

No arms have been manufactured at the Springfield armory during the past year, the operations at that post having been confined to cleaning and repairing arms which were turned in after the war, and to making the necessary preparations for converting the Springfield muskets into breech-loaders. About five thousand muskets have been converted into efficient breech-loaders, and the conversion will be continued as fast as practicable. It is believed that two hundred of these muskets will be turned out daily in February.

The experiments which have been carried on at Fort Monroe arsenal to test the power and endurance of the eight-inch and twelve-inch rifle guns, made of cast iron, by this department, are highly satisfactory, and warrant the belief that cast-iron rifle guns, of these calibres, may be introduced into the military service with safety and advantage. The twelve-inch rifle, throwing a projectile of six hundred pounds, and with fifty-five pounds of powder, has been fired three hundred and ninety times. It is believed that no rifle gun of this calibre has ever given so great endurance. The further trial of these guns will be continued.

An examination of the returns of cavalry and infantry regiments for three consecutive years shows a consumption by loss and wear of—

Cavalry carbines, 20 per cent. per annum.

Cavalry pistols, 26 per cent. per annum.

Cavalry sabres, 26 per cent. per annum.

Carbine accoutrements, 26 per cent. per annum.

Sabre accoutrements, 31 per cent. per annum.

Infantry rifle muskets, 13 per cent. per annum.

Infantry accoutrements, 16 per cent. per annum.

This would indicate the average *service life* of cavalry carbines at five years; that of cavalry pistols and sabres at four years, and the same of all cavalry accoutrements except those for sabres, whose duration is only three years.

The average *service life* of infantry rifle muskets is seven years, and that of infantry accoutrements is six years. The foregoing results are all calculated for times of active service in war, and with ordinary repairs.

I append to this report a summary statement of the principal ordnance and ordnance stores which this department provided for the military service from the 1st of January, 1861, to the end of the past fiscal year, being a period of five and a half years, and including the entire duration of the war of the rebellion. From this it will be seen that there were so provided—

7,892 cannon.

11,787 artillery carriages.

6,335,295 artillery projectiles, (shot and shell.)

6,539,999 pounds of grape and canister shot.

2,862,177 rounds of fixed artillery ammunition.

3,477,655 small-arms, (muskets, rifles, carbines, and pistols.)

544,475 swords, sabres, and lances.

2,146,175 complete sets of infantry accoutrements.

216,371 complete sets of cavalry accoutrements.

539,544 complete sets of horse equipments.

28,164 sets of two horse artillery harness.

732,526 horse blankets.

1,022,176,474 cartridges for small-arms.

1,220,555,435 percussion caps for small-arms.

10,281,305 cannon primers.

4,226,377 fuzes for shell.

26,440,054 pounds of gunpowder.

6,395,152 pounds of nitre.

90,416,295 pounds of lead in pigs and bullets.

Besides immense quantities of parts for repairing and making good the complete articles which were damaged, lost, or destroyed in service.

The statement of purchases, also appended, shows the kinds and quantities of supplies so procured more in detail, with their cost.

The work of arming the permanent fortifications, and of increasing their efficiency by providing guns of large calibres, and replacing the perishable wooden carriages by durable carriages of wrought iron, has progressed rapidly, and will be continued as fast as the available means will admit, until all the light guns which are ineffective against iron-clad war vessels and all the wooden carriages shall have been superseded by the most effective and durable articles of their respective kinds.

Since the recent introduction into service of wrought-iron sea-coast carriages there have been fabricated and supplied to the forts 1,129 of these carriages for barbette and casemate guns.

The armament of our fortifications now includes 3,546 serviceable cannon, of which 1,334 are of heavy calibres (20, 15, 10 and 8 inch bore) and 653 are rifled cannon. The residue are of smaller calibre from 42-pounders down, including 120 movable field-pieces.

Very respectfully, your obedient servant,

A. B. DYER,

*Brevet Major General, Chief of Ordnance.*

Hon. E. M. STANTON, *Secretary of War.*

*Summary statement of purchases and fabrications from January 1, 1861, to June 30, 1866.*

Designation.	Purchases.	Fabrications.	Total.
Field guns.....	4, 048	.....	4, 048
Siege guns.....	677	.....	677
Sea-coast guns.....	2, 350	.....	2, 350
Mortars.....	817	.....	817
Field carriages and limbers.....	2, 416	1, 360	3, 776
Siege carriages and limbers.....	139	651	790
Sea-coast carriages.....	391	1, 863	2, 254
Battery wagons, caissons and forges.....	3, 326	931	4, 257
Mortar beds.....	99	611	710
Projectiles for smooth-bore guns.....	2, 704, 852	.....	2, 704, 852
Projectiles for rifled guns.....	3, 043, 610	.....	3, 043, 610
Pounds of grape and canister shot.....	6, 539, 999	.....	6, 539, 999
Hand grenades.....	98, 200	633	98, 833
Rounds of ammunition for smooth bore guns.....	146, 514	1, 527, 649	1, 674, 163
Rounds of ammunition for rifled guns.....	8, 543	1, 179, 471	1, 188, 014
Carbines, breech-loading.....	396, 896	.....	396, 896
Carbines, muzzle-loading.....	10, 838	.....	10, 838
Springfield rifle muskets.....	670, 617	801, 997	1, 472, 614
Enfield rifle muskets.....	428, 292	.....	428, 292
All other muskets and rifles.....	795, 544	.....	795, 544
Revolvers.....	372, 823	.....	372, 823
Pistols, muzzle-loading.....	648	.....	648
Swords.....	124, 676	.....	124, 676
Sabres.....	415, 232	.....	415, 232
Lances.....	4, 301	266	4, 567
Infantry accoutrements, sets of.....	2, 109, 175	37, 000	2, 146, 175
Infantry accoutrements, parts of sets.....	2, 259, 951	1, 168, 204	3, 428, 155
Cavalry accoutrements, sets of.....	208, 371	8, 000	216, 371
Cavalry accoutrements, parts of sets.....	1, 686, 300	123, 930	1, 810, 230
Horse equipments, sets of.....	478, 744	60, 800	539, 544
Horse equipments, parts of sets.....	3, 491, 759	1, 049, 583	4, 541, 342
Artillery harness, sets for two horses.....	18, 858	9, 306	28, 164
Horse blankets.....	732, 526	.....	732, 526
Cartridges for carbines.....	157, 658, 931	50, 617, 898	208, 276, 829
Cartridges for muskets, cal. .577 and .58.....	46, 409, 514	424, 441, 565	470, 851, 079
Cartridges for all other muskets.....	8, 766, 400	221, 571, 978	230, 338, 378
Cartridges for pistols.....	27, 068, 810	64, 385, 403	91, 454, 213
Blank cartridges for small-arms.....	2, 047, 011	19, 208, 964	21, 255, 975
Cartridge bags, filled.....	.....	2, 205, 811	2, 205, 811
Percussion caps.....	893, 362, 574	327, 192, 861	1, 220, 555, 435
Friction primers.....	.....	10, 281, 305	10, 281, 305
Fuzes.....	.....	4, 226, 377	4, 226, 377
Cannon powder, pounds.....	9, 540, 603	.....	9, 540, 603
Mortar powder, pounds.....	7, 428, 142	.....	7, 428, 142
Musket and rifle powder, pounds.....	8, 834, 551	.....	8, 834, 551
Mealed powder, pounds.....	358, 829	.....	358, 829
All other powder, pounds.....	259, 940	17, 989	277, 929
Nitre, pounds.....	6, 395, 152	.....	6, 395, 152
Sulphur, pounds.....	.....	.....	.....
Lead balls, pounds.....	19, 035, 884	27, 865, 019	46, 900, 903
Lead, pig and wire, pounds.....	85, 481, 312	34, 080	85, 515, 392
Cartridge bags, unfilled.....	.....	4, 976, 279	4, 976, 279
Cartridge bag stuff, yards.....	1, 045, 618	.....	1, 045, 618

A. B. DYER,  
Brevet Major General, Chief of Ordnance.

ORDNANCE OFFICE, October 23, 1866



*Statement of ordnance and ordnance stores purchased by the Ordnance Department from January 1, 1861, to June 30, 1866.*

CLASS 1.—*Field guns.*

587	10-pounder Parrott guns 2.9 and 3-inch.....	\$120,053 67
925	3-inch wrought-iron guns .....	332,161 42
15	3-inch steel guns.....	7,612 25
2	3½-inch wrought-iron guns.....	740 00
2	semi-steel guns.....	613 65
152	6 pounder bronze guns.....	61,209 10
162	6-pounder bronze guns, rifled.....	74,894 47
25	6-pounder Wiard guns.....	11,109 50
12	6-pounder cast-steel guns.....	9,633 78
1	9-pounder Sawyer gun.....	250 00
1,127	12-pounder bronze guns, light and heavy.....	641,501 79
10	12-pounder bronze guns, rifled.....	6,893 50
20	12-pounder Wiard guns.....	14,418 00
2	12-pounder wrought-iron guns.....	800 00
1	12-pounder "Hooper's metal" gun.....	3,129 96
388	12-pounder mountain howitzers.....	52,775 50
73	12-pounder field howitzers.....	28,038 59
12	12-pounder boat howitzers.....	5,171 65
6	14-pounder bronze guns.....	2,553 74
338	20-pounder Parrott guns.....	133,830 10
10	24-pounder boat howitzers.....	7,555 40
58	24-pounder field howitzers.....	24,683 72
63	Union repeating guns.....	53,485 00
5	Billingham & Requa guns.....	5,482 75
22	Ellsworth guns.....	9,511 87
30	Woodruff guns.....	8,550 00

*Siege and sea-coast guns.*

392	30-pounder Parrott guns .....	218,401 40
113	4.5-inch rifle guns.....	51,068 08
1	24-pounder sea-coast gun.....	750 00
4	24-pounder rifle guns.....	2,309 63
1	42-pounder sea-coast gun.....	771 44
1	7-inch rifle gun.....	700 00
13	7-inch wrought-iron guns, "Ames's".....	215,163 96
237	100-pounder Parrott guns.....	309,093 95
90	200-pounder Parrott guns ..	201,994 75
40	300-pounder Parrott guns.....	197,470 50
240	8-inch Rodman guns.....	194,242 71
1,015	10-inch Rodman guns.....	1,679,948 55
286	15-inch Rodman guns.....	1,923,875 44
1	20-inch Rodman gun.....	32,781 87
3	8-inch rifle guns.....	7,622 26
16	9-inch Dahlgren guns.....	11,022 45
1	12-inch rifle gun.....	6,356 20
1	13-inch Rodman gun.....	4,500 00
172	8-inch siege howitzers.....	43,946 36
200	24-pounder flank-defence howitzers.....	32,870 73
298	24-pound bronze Coehorn mortars.....	33,068 07
199	8-inch siege mortars.....	21,828 75
188	10-inch siege mortars.....	34,180 16
42	10-inch sea-coast mortars.....	15,765 47
90	13-inch sea-coast mortars.....	114,632 84

## CLASS 2.

1,551	6-pounder field carriages.....	\$485,160	70
686	12-pounder field carriages.....	235,967	10
25	12-pounder mountain howitzer carriages.....	1,696	27
100	12-pounder prairie carriages.....	17,628	52
54	boat howitzer carriages.....	27,000	00
2,539	caissons.....	832,272	33
300	forges "A".....	92,295	49
40	forges "B".....	12,320	75
241	battery wagons "C".....	96,700	06
25	battery wagons "D".....	8,394	00
71	4.2-inch gun carriages.....	30,206	00
6	18 pounder gun carriages.....	2,280	00
62	8-inch siege howitzer carriages.....	19,674	36
81	limbers.....	10,650	00
100	prairie carts.....	10,958	04
248	100-pounder gun carriages, Parrott's.....	166,273	00
88	200-pounder gun carriages, Parrott's.....	69,856	80
32	300-pounder gun carriages, Parrott's.....	52,976	00
15	carronade carriages.....	3,375	00
3	8-inch casemate carriages, wood.....	1,261	65
5	10-inch columbiad carriages, wood.....	2,197	75
99	mortar beds.....	45,249	29.

## CLASS 3.

11,534	sets artillery harness, two horses, lead.....	922,459	48.
7,324	sets artillery harness, two horses, wheel.....	689,703	50
22,269	watering buckets.....	55,441	42
495	pendulum hausses.....	2,366	20
14,346	artillery paulins.....	316,648	76
1,935	artillery paulins, made from government canvas..	6,875	50
1,241	cannon sights.....	4,934	25

CLASS 4.—*Smooth-bore projectiles.*

158,561	6-pounder shot.....	37,356	46
329,352	12-pounder shot.....	187,562	78.
17,250	18-pounder shot.....	14,640	36
100,051	24-pounder shot.....	85,543	23
37,494	32-pounder shot.....	47,946	56
7,431	42-pounder shot.....	10,312	78
36,789	8-inch shot.....	86,067	12
72,533	10-inch shot.....	340,545	01
150	13-inch shot.....	1,889	50
1,659	15-inch shot.....	33,982	22
112	20-inch shot.....	10,783	89
1,541	6-pound shell.....	283	70
344,080	12-pound shell.....	159,610	64
15,719	18-pound shell.....	12,425	01
211,810	24-pound shell.....	194,140	48
76,452	32-pound shell.....	94,290	80
14,190	42-pound shell.....	18,148	15
140,418	8-inch shell.....	307,591	17
3,600	9-inch shell.....	9,528	60
96,617	10-inch shell.....	424,883	90
578	12-inch shell.....	4,202	20

22,542	15-inch shell .....	\$350,252
50	20-inch shell .....	3,034
145,148	8-inch mortar shell .....	275,517
52,244	10-inch mortar shell .....	155,835
44,181	13-inch mortar shell .....	304,195
110,874	6-pounder spherical case shot .....	20,163
542,743	12-pounder spherical case shot .....	194,535
2,136	18-pounder spherical case shot .....	1,006
58,870	24-pounder spherical case shot .....	31,969
43,794	32-pounder spherical case shot .....	34,471
8,431	42-pounder spherical case shot .....	8,649
7,479	8-inch spherical case shot .....	11,995
6,539,999	pounds grape and canister shot .....	314,559

*Projectiles for rifled guns—Absterdam projectiles.*

2,480	3-inch shot .....	3,100
24,900	3-inch shell .....	45,126
10,480	3-inch case .....	25,210
230	4.2-inch shot .....	690
6,720	4.2-inch shell .....	24,778
220	4.2-inch case .....	880
15,496	4.5-inch shell .....	58,661
1,232	4.5-inch case .....	4,703
3,601	Tatham's canister .....	4,751

*Dyer projectiles.*

56,373	3-inch shot .....	45,415
8,398	4.5-inch shot .....	18,794
30	24-pound shot .....	210
284	32-pound shot .....	1,027
66	42-pound shot .....	288
1,615	8-inch shot .....	9,987
281	12-inch shot .....	10,392
1,467	3-inch shell .....	1,138
12,784	4.5-inch shell .....	27,010
329	6-pound shell .....	664
360	24-pound shell .....	2,313
6,007	32-pound shell .....	24,362
17,998	42-pound shell .....	92,791
498	8-inch shell .....	2,571
91	12-inch shell .....	2,969
41,588	3-inch case .....	28,362
8,531	3-inch canister .....	1,194
11,505	3-inch assorted projectiles .....	7,229

*Hotchkiss projectiles.*

1,795	2.6-inch shot .....	1,697
15,040	3-inch shot .....	22,203
1,600	3.4-inch shot .....	2,130
16,256	3.67-inch shot .....	22,984
1,000	3.8-inch shot .....	1,750
4,788	4.2-inch shot .....	11,083
5,000	4.5-inch shot .....	17,944
761	7-inch shot .....	8,896
12,490	2.6-inch shell .....	11,085

4,420	2.9-inch shell.....	\$4,461 75
292,244	3-inch shell.....	514,347 77
6,800	3.4-inch shell.....	10,391 55
5,721	3.5-inch shell.....	9,908 90
71,536	3.67-inch shell.....	116,230 85
7,704	3.8-inch shell.....	14,672 20
8,372	4.2-inch shell.....	22,188 50
8,836	4.5-inch shell.....	32,066 15
2,020	4.62-inch shell.....	5,830 45
212	7-inch shell.....	2,550 65
320	2.6-inch case.....	304 00
296,031	3-inch case.....	443,466 82
788	3.4-inch case.....	1,715 80
6,328	3.5-inch case.....	14,562 45
81,638	3.67-inch case.....	175,660 10
3,570	3.8-inch case.....	8,116 20
288	4.2-inch case.....	1,203 00
1,000	4.5-inch case.....	2,700 00
2,915	2.6-inch canister.....	1,830 60
840	2.9-inch canister.....	771 50
100,372	3-inch canister.....	103,218 20
1,910	3.4-inch canister.....	2,131 50
1,340	3.5 inch canister.....	1,838 45
21,086	3.67-inch canister.....	26,967 85
636	3.8-inch canister.....	965 40
620	4.2-inch canister.....	1,161 95

*Sawyer projectiles.*

3,120	6-pound shot.....	7,750 00
2,440	12-pound shot.....	8,680 00
35	24-pound shot.....	183 75
4,428	6-pound shell.....	10,073 30
250	9-pound shell.....	1,000 00
3,052	12-pound shell.....	10,646 14
238	24-pound shell.....	1,599 50
4,000	3-inch shell.....	5,852 00
1,300	6-pound case.....	3,575 00
100	50-pound case.....	541 00
3,715	6-pound canister.....	7,661 93
1,408	12-pound canister.....	4,022 08
12	24-pound canister.....	57 00
15	5.82-inch case.....	111 35

*Parrott projectiles.*

149,811	10-pound shot.....	196,249 30
85,289	20-pound shot.....	146,709 70
80,267	30-pound shot.....	170,360 70
25,825	100-pound shot.....	165,717 82
7,331	200-pound shot.....	92,881 50
1,125	300-pound shot.....	21,184 66
5,822	24-pound shot.....	21,636 05
7,957	32-pound shot.....	39,449 60
5,222	42-pound shot.....	34,931 20
279,979	10-pound shell.....	240,019 89
149,449	20-pound shell.....	216,909 20

199,538	30-pound shell.....	\$443,777
54,591	100-pound shell.....	396,657
20,229	200-pound shell.....	259,312
4,049	300-pound shell.....	73,262
14,119	24-pound shell.....	58,743
19,035	32-pound shell.....	92,251
7,628	42-pound shell.....	51,273
200	12-inch shell.....	6,600
51,130	10-pound case.....	106,245
26,114	20-pound case.....	83,094
28,860	30 pound case.....	120,713
6,737	100-pound case.....	56,326
2,520	200-pound case.....	37,436
2,086	24-pound case.....	9,965
1,877	32-pound case.....	10,309
22,400	10-pound canister.....	39,017
8,030	20-pound canister.....	12,566
6,080	30-pound canister.....	11,176
4,540	100-pound canister.....	15,743

*James's projectiles.*

4,793	6-pound shot.....	8,973
3,260	12-pound shot.....	8,251
7,072	24-pound shot.....	33,418
7,342	32-pound shot.....	43,887
9,374	42-pound shot.....	67,993
40	7-inch shot.....	295
100	8-inch shot.....	1,224
10	12-inch shot.....	313
20,828	6-pound shell.....	45,674
6,536	12 pound shell.....	18,784
9,556	24-pound shell.....	39,208
9,350	32-pound shell.....	53,698
1,550	42-pound shell.....	10,540
60	7-inch shell.....	428
3,156	6-pound canister.....	7,070
1,004	12-pound canister.....	3,097
336	24-pound canister.....	1,528

*Schenkl projectiles.*

1,000	3.67-inch shot.....	1,330
1,310	3.8-inch shot.....	1,742
292	4.2-inch shot.....	966
1,947	4.62-inch shot.....	4,994
57	7-inch shot.....	555
125,510	3-inch shells.....	275,095
35,220	3.67-inch shells.....	81,540
5,556	3.8-inch shell.....	11,372
676	4.2-inch shell.....	2,430
75,118	4.5-inch shell.....	272,060
2,315	4.62-inch shell.....	7,657
367	10-inch shell.....	5,872
53,570	3-inch case.....	137,136
6,500	3.67-inch case.....	20,118
1,630	3.8-inch case.....	4,755

292	4.2-inch case.....	\$1,512 40
23,904	4 5-inch case .....	109,634 00
391	4.62-inch case .....	1,466 25
600	4.67-inch case .....	2,250 00
510	3.67-inch canister .....	1,273 00
500	4.5-inch canister .....	1,458 75
702	4.67-inch canister .....	1,404 00
402	4.5-inch shot .....	971 50

## CLASS 5.

25,556	1-pound Ketcham's hand grenades.....	15,576 80
42,799	3-pound Ketcham's hand grenades.....	34,340 71
24,845	5-pound Ketcham's hand grenades.....	22,815 28
5,000	Adams's hand grenades.....	4,750 00

*Fixed ammunition.*

33,291	6-pound shot .....	36,788 35
14,169	6-pound shell.....	29,864 02
11,026	6-pound case .....	17,641 60
19,723	6-pound canister .....	27,423 75
12,333	12-pound shot .....	20,331 30
31,840	12-pound shell....	54,154 10
10,694	12-pound case.....	20,773 20
12,090	12-pound canister.....	19,856 90
1,348	32-pound shell ...	4,044 00
8,543	3-inch canister....	10,678 75

CLASS 6.—*Carbines.*

1,509	Ballard.....	35,140 00
1,002	Ball's.....	25,387 00
55,567	Burnside.....	1,412,620 41
9,342	Cosmopolitan.....	199,838 29
22,728	Gallagher.....	508,492 94
1,052	Gibbs's .....	27,995 25
3,520	Hall's.....	64,763 50
11,261	Joslyn .....	282,586 00
892	Lindner's.....	19,895 00
14,495	Merrill's.....	374,804 63
20,002	Maynard's.....	489,399 78
1,001	Palmer's.....	20,918 50
20,000	Remington's .....	436,752 00
80,512	Sharp's.....	2,213,192 00
30,062	Smith's.....	745,645 24
94,196	Spencer's .....	2,393,633 82
25,603	Starr's.....	586,773 79
4,001	Warner's .....	79,310 54
151	Wesson's.....	3,491 75
200	French carbines.....	4,800 00
10,051	foreign carbines.....	66,193 00
587	musketoons .....	5,815 50

*Muskets and rifles.*

670,617	Springfield rifle muskets, calibre .58.....	13,089,855 73
1,000	Lindsay's double shot muskets.....	25,250 00
35	Ballard rifles.....	1,262 00



4,612	Colt's revolving rifles .....	\$204,487
900	Green's rifles .....	33,266
1,731	Henry's rifles .....	63,953
583	Merrill's rifles .....	23,880
9,141	Sharp's rifles .....	330,629
12,471	Spencer's rifles .....	467,390
1,575	Hall's rifles .....	23,704
22,793	Harper's Ferry rifles .....	414,316
1,832	rifles, calibre .69 .....	20,076
428,292	Enfield rifles, long, calibre .577, triangular bayonet	7,869,175
8,034	Enfield rifles, short, calibre .577, sword bayonet.	187,915
162,533	Boker's rifles .....	2,267,834
25,000	Boker's rifles, sword bayonet .....	139,254
44,250	French rifles .....	757,416
57,467	Belgian rifles .....	811,109
226,294	Austrian rifles .....	2,640,704
59,918	Prussian rifles .....	590,486
29,850	Jäger rifles .....	260,785
1,673	Suhl rifles .....	26,056
4,182	Tower rifles .....	18,819
5,995	Garibaldi rifles .....	35,970
81,652	Prussian smooth-bore muskets .....	554,849
29,201	foreign smooth-bore muskets .....	234,345
2,181	American smooth-bore muskets .....	21,825
641	rifles, various kinds .....	15,256

*Pistols.*

536	Allen's revolvers .....	9,130
415	Adam's revolvers .....	7,526
2,814	Beall's revolvers .....	38,315
129,730	Colt's army revolvers .....	2,296,112
17,010	Colt's navy revolvers .....	466,068
1,100	Joslyn revolvers .....	24,793
200	Perrin's revolvers .....	1,000
2,001	Pettingill's revolvers .....	40,287
12,374	Le Fauchaux revolvers .....	167,489
125,314	Remington's army revolvers .....	1,631,629
4,901	Remington's navy revolvers .....	59,838
978	Raphael's revolvers .....	16,181
11,284	Savage's revolvers .....	221,355
47,952	Starr's revolvers .....	737,793
5,000	Roger and Spencer's revolvers .....	60,739
11,214	Whitney revolvers .....	139,690
100	foreign pistols .....	1,000
200	horse pistols .....	1,400
348	signal pistols .....	1,936

*Swords and sabres.*

189,114	cavalry sabres .....	1,019,726
203,285	light cavalry sabres .....	1,311,724
20,757	horse artillery sabres .....	107,748
797	staff officers' swords .....	13,992
1,279	cavalry officers' sabres .....	14,845
2,038	foot officers' swords .....	22,531
86,655	non-commissioned officers' swords .....	432,152

33,531	musicians' swords.....	\$133,238 32
2,152	foot artillery swords.....	5,090 50
300	cutlasses .....	1,359 00
4,301	lances .....	17,006 00

CLASS 7.—*Cavalry and artillery equipments.*

72,139	artillery sabre belts.....	106,263 95
1,500	artillery waist belts .....	2,087 00
196,351	cavalry accoutrements, full sets.....	1,268,763 68
238,520	carbine cartridge boxes.....	283,500 70
236,393	carbine slings .....	264,467 25
152,331	carbine swivels.....	98,917 53
325,452	pistol holsters.....	263,815 84
171,264	pistol cartridge pouches.....	111,050 83
304,365	sabre belts.....	516,840 67
225,975	sword knots .....	65,084 06
12,020	Mann's cavalry accoutrements, sets.....	98,846 85
32,000	Blakeslee cartridge boxes.....	153,036 00

*Infantry accoutrements.*

2,065,875	infantry accoutrements, sets.....	7,541,643 51
416,290	bayonet scabbards.....	218,796 00
376,305	cap pouches.....	171,837 95
190,684	cartridge boxes.....	213,220 11
114,378	cartridge-box plates.....	11,357 25
216,358	cartridge-box belts.....	120,668 18
151,573	cartridge-box belt plates.....	12,189 95
265,866	gun slings.....	80,560 74
98,737	non-commissioned officers' sword belts.....	116,325 79
238,578	waist belts.....	96,087 46
143,348	waist belt plates.....	11,738 35
37,000	Mann's infantry accoutrements, sets.....	199,934 75
9,598	non-commissioned officers' waist belts.....	5,552 10
20,957	non-commissioned officers' shoulder belts.....	14,810 30
5,300	Spencer rifle accoutrements, sets.....	16,986 50
1,000	Blakeslee cartridge-boxes.....	7,150 00
692	officers' sword belts.....	1,834 70
14,275	non-commissioned officers' belt plates.....	2,927 50
3,004	frogs .....	1,035 30

*Horse equipments.*

478,744	horse equipments, full sets.....	12,610,817 41
80,020	bridles, curb .....	340,933 13
8,565	bridles, watering.....	15,341 13
651,863	currycombs .....	147,563 37
3,986	carbine sockets .....	1,549 04
60,649	girths.....	60,034 43
140,360	halters.....	259,463 77
747,159	horse-brushes .....	436,254 46
90,777	links.....	25,836 60
169,614	lariats.....	71,582 43
339,190	nose bags.....	481,707 31
258,174	picket pins.....	36,972 79

7,803	saddles.....	\$139,732 5
16,329	saddle-bags.....	72,344 5
589,588	blankets, blue.....	1,856,938 5
90,605	blankets, red.....	368,238 5
45,692	blankets, gray.....	98,961 5
6,641	blankets, rubber.....	11,612 7
4,000	felt saddle-cloths.....	17,370 0
454,914	spurs, pairs.....	157,526 1
378,088	spur straps, pairs.....	49,815 5
6,775	stirrups and straps, pairs.....	2,446 1
69,893	surcingles.....	93,680 0
3,600	sweat leathers, pairs.....	5,071 5

*Appendages for small-arms.*

10,876	ball screws.....	1,172 6
130,952	cones.....	9,843 2
93,332	screw-drivers.....	13,651 8
2,832	spring vices.....	672 6
4,250	swages.....	854 0
3,559	tompions.....	201 0
31,704	wipers.....	5,059 0

## CLASS 8.

259,940	powder, blasting, pounds.....	73,017 15
8,897,226	powder, cannon, pounds.....	2,108,387 41
643,377	powder, mammoth, pounds.....	215,140 09
7,428,142	powder, mortar, pounds.....	1,923,675 63
8,557,663	powder, musket, pounds.....	2,124,283 81
276,888	powder, rifle, pounds.....	77,791 51
358,829	powder, mealed, &c., pounds.....	80,207 80
18,205,870	lead bullets, pounds.....	1,672,926 64
16,920,668	lead bullets, made from government lead.....	282,018 44
1,120,692	fuzes, time and percussion.....	449,709 60
40,383	fuzes, combination.....	26,639 82
222,586	friction primers.....	4,509 72
830,014	buck-shot, pounds.....	78,432 93
893,362,574	percussion caps.....	799,372 05
894,016	fuze plugs.....	305,394 75
240,641,400	percussion primers, Austrian, &c.....	11,683 50
2,557,574	Sharp's primers.....	4,758 74

*Cartridges.*

3,527,450	Ballard's.....	57,945 05
21,819,200	Burnside's.....	547,490 05
6,300,000	Cosmopolitan.....	132,007 27
8,294,023	Gallagher's.....	211,893 92
173,760	Green's.....	3,869 82
4,610,400	Henry's.....	107,353 05
515,416	Joslyn.....	12,935 37
100,000	Lindner.....	2,262 00
2,157,000	Maynard.....	72,207 50
5,502,750	Merrill's.....	105,779 32
4,257,000	Remington.....	68,600 00

16,306,508	Sharp's.....	\$347,410 57
1,061,000	Sharp's & Hankin's.....	27,402 00
13,861,500	Smith's.....	377,569 78
58,238,924	Spencer's.....	1,419,277 16
6,860,000	Starr's.....	140,768 30
1,028,000	Warner's.....	27,472 00
46,409,514	rifle, calibre .58, &c.....	712,913 05
254,000	Wesson's.....	3,666 60
6,021,220	buck and ball.....	86,982 28
842,880	Le Fauchaux.....	17,039 00
2,735,180	round ball.....	51,273 12
2,047,011	blank.....	10,153 05
2,852,000	carbine.....	63,227 38
26,225,930	pistol:.....	390,485 86
10,000	Gardner's shell.....	350 00

## CLASS 9.

27,034	saddle-trees.....	113,459 66
—	spare parts of small-arms.....	2,605,326 36
22,498	artillery harness irons, sets.....	194,257 80
20,580	artillery traces, lead.....	86,509 45
17,020	artillery traces, wheel.....	47,134 26
43,622	artillery whips.....	42,535 24
14,367	artillery collars.....	49,096 33
6,222	artillery halters.....	9,795 37
22,948	cavalry saddle-trees.....	101,499 97
3,370	chassis rails.....	266,912 82
1,610,984	parts of iron gun carriages, pounds.....	135,262 20
2,020	artillery saddles.....	42,043 54
33,023	artillery trace chains.....	47,746 82
1,465,499	buckles.....	69,251 11
41,171	bits.....	80,664 66
5,059,400	Maynard's cartridge cases.....	93,498 02
125,146	blue webbing, yards.....	51,994 69
266,720	sand bags.....	44,256 40

*Materials, &c.*

85,481,312	lead, pounds.....	7,394,644 96
348,085	copper, pounds.....	186,875 57
51,431	zinc, pounds.....	9,828 29
318,161	rope, pounds.....	111,316 64
805,350	cartridge paper, pounds.....	93,050 30
6,395,152	nitre, pounds.....	743,727 48
14,643	moreens, pieces.....	92,237 31
576,138	cartridge cloth, yards.....	439,369 62
103,405	cartridge silk, yards.....	50,045 04
123,407	cartridge linen, yards.....	60,021 34
245,387	cotton duck, yards.....	296,588 81

A. B. DYER,  
*Brevet Major General, Chief of Ordnance.*

ORDNANCE OFFICE, *October 23, 1866.*

PROCEEDINGS OF A BOARD OF OFFICERS CONVENED AT WASHINGTON, D. C.,  
IN ACCORDANCE WITH SPECIAL ORDER No. 40, DATED WAR DEPT.  
MENT, ADJUTANT GENERAL'S OFFICE, WASHINGTON, JANUARY 30, 1866.  
VIZ:

[Special Order No. 40.]

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,  
*January 30, 1866*

[Extract.]

\* \* \* \* \*

VII. A board of officers will assemble at Washington, D. C., on the 1st day of March, 1866, or as soon thereafter as practicable, to examine thoroughly the following questions, and make recommendations thereon:

1. What form and calibre of breech-loading arm should be adopted as a model for future construction of muskets for infantry?

2. What form and calibre should be adopted as a model for future construction of carbines for cavalry?

3. What form of breech-loading arm should be adopted as a model for conversion of muskets already constructed to breech-loading muskets?

Each person who submits an arm to the above board will be required to submit in writing the lowest price at which it will be furnished in the event of its being adopted by the government.

The Chief of Ordnance will furnish the board all the information in his power and will also provide it with office room, stationery, and a place for experimental firing, targets, ammunition, &c.

The report of the board will be made through the Chief of Ordnance.

#### DETAIL FOR THE BOARD.

Major General W. S. Hancock, U. S. V.; Brevet Major General R. C. Buchanan, Col. 1st U. S. Inf.; Brevet Brigadier General P. V. Hagner, Lt. Col. Ordnance Dept. U. S. A.; Brevet Brigadier General Charles Griffin, Capt. 5th U. S. Art'y; Brevet Colonel J. G. Benton, Maj. Ordnance Dept. U. S. A.; Brevet Colonel Horace Porter, Lt. Col., Aide-de-camp; Brevet Lieutenant Colonel Wesley Owens, Capt. 5th U. S. Cavalry.

\* \* \* \* \*

By order of the Secretary of War:

E. D. TOWNSEND,  
*Assistant Adjutant General*

Official:

E. D. TOWNSEND, A. A. G.

#### FIRST DAY.

WASHINGTON, D. C., *March 10, 1866.*

The board met at 11 o'clock a. m., pursuant to the above order. Present, all the members.

The order assembling the board having been read, as well as the communication of Brevet Major General A. B. Dyer, Chief of Ordnance, submitting the proceedings of the board which met at Springfield armory in January, 1865, together with the propositions of parties who then presented arms for trial, and also certain similar propositions which require the action of the board, it was decided to defer any action on the propositions made to the Springfield board

At the next meeting, in order to enable the recorder to make a synopsis of them in a view to facilitate the action of the board.

The board then proceeded to prepare a suitable notice to inventors and agents concerned, for publication in such public papers as the Secretary of War authorizes, as follows:

*Breech loading arm.*—The board for the examination of breech-loading arms, which General Hancock is president, is now in session at No. 51 Winder's building.

Arms will be received daily, between the hours of 11 a. m. and 2 p. m., without further notice. Inventors are requested to submit their arms, in person or agent, to the recorder of the board.

W. OWENS,

*"Capt. 5th U. S. Cav., Bvt. Lt. Col. U. S. A., Recorder."*

The board then adjourned to meet again on Tuesday, 13th instant, at 12 o'clock, in order to enable the recorder to collect the arms, papers, &c., now in Washington, which are to be submitted to the board, and that members may prepare themselves for proceeding with the business before it.

#### SECOND DAY.

WASHINGTON, D. C., *March 13, 1866.*

Board met at 12 o'clock m., pursuant to adjournment. Present, all the members. Upon motion the following plan for proceeding with the business before the board was adopted, viz:

#### *Programme for Board on Breech-loading Arms.*

I. Each arm will be taken apart by the inventor or his agent, and its construction and operation fully explained to the board. At the same time a written description of the arm, setting forth its special merits, patent claims, &c., should be furnished for the records of the board.

II. After a suitable number of arms shall have been examined, the board will proceed to the arsenal and test their working qualities; and for this purpose each gun will be fired, by the person submitting it, not less than one hundred times.

III. After all the arms have been submitted to this preliminary examination and test the board will select those deemed most suitable for the military service, and subject them to further test, in the hands of soldiers, by firing for range, accuracy, penetration, and rapidity, and for strength and endurance by firing increasing charges.

IV. The question of calibre will be determined by the board after due consideration of the experiments made by this and foreign governments on this subject. The board, however, will verify by actual trial the conclusions arrived at.

V. Each person will state, in writing, the lowest price at which his arm will be furnished by himself, or the rate per thousand at which he will allow the government to make them. These proposals will be made separately, on forms to be furnished on application, and will be directed, sealed, to the recorder, and indorsed "Proposals for furnishing breech-loading arms," and will be opened at such time as the board may direct.

The board then adjourned to meet again to-morrow, the 14th instant, at 12 o'clock m.

#### THIRD DAY.

WASHINGTON, D. C., *March 14, 1866.*

The board met at 12 o'clock m., pursuant to adjournment. Present, all the members.



The board took up for examination the "Allin gun," an alteration of a United States Springfield rifle musket, which was made at the Springfield armory; upon concluding which the board decide that an application be made to the headquarters of the army for an officer who should be specially designated as recorder, and have charge of all records pertaining to the proceedings of the board.

The board then adjourned to meet again on Friday, 16th instant, at 11 o'clock a. m., in consequence of one of its members, Brevet Lieutenant Colonel Owens, having been ordered to appear before a general court-martial at Annapolis, Md., on the intervening Thursday.

#### FOURTH DAY.

WASHINGTON, D. C., *March 16, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members excepting Colonel Benton, whose absence was caused by serious illness in his family.

The board took up for an informal examination Miller's carbine, presented by the inventor, who was informed of the absence of Colonel Benton, and asked if he objected to an examination of his arm. Mr. Miller making no objection the examination was completed.

The next arm presented was the Robertson & Simpson carbine, by Mr. Simpson in person, who was informed of, and did not object to, the absence of Colonel Benton, and it was then informally examined.

The board being unable to experiment by firing at the arsenal on Saturday, it adjourned to meet again on Monday, the 19th instant, at 11 o'clock a. m.

#### FIFTH DAY.

WASHINGTON, D. C., *March 19, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members except Colonel Benton.

An order detailing Brevet Lieutenant Colonel C. C. Parsons, fourth United States artillery, as recorder of the board, appended herewith and marked "A," was presented, and Brevet Lieutenant Colonel Parsons took his place as recorder.

An order authorizing members of the board to draw commutation for fuel and quarters, appended herewith and marked "B," was presented.

The board then proceeded to an informal examination of the following arms, the parties presenting them being notified of the absence of Colonel Benton and the character of the examination and making no objection thereto, viz:

Wilson & Flather's plan for the modification of the Springfield musket, presented by Mr. Wilson.

Hayden's self-loading carbine, presented by Mr. Hayden.

There being no further business before the board this day, it adjourned to meet again to-morrow, 20th instant, at 11 o'clock a. m.

#### SIXTH DAY.

WASHINGTON, D. C., *March 20, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members except Colonel Benton, and present the recorder.

The board proceeded to an informal examination of the following named arms, the parties presenting them being notified of the absence of Colonel Benton and the character of the examination and making no objection thereto, viz:

Triplett & Scott carbine and rifle, presented by Mr. Scott and Mr. Doolittle.

Miller's plan for the modification of the Springfield musket, No. 1, presented by Mr. Miller.

There being no further business for this day the board adjourned to meet again **morrow**, 21st instant, at 11 o'clock a. m.

## SEVENTH DAY.

WASHINGTON, D. C., *March 21, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all members and recorder.

The board proceeded to an examination of the "Peabody arm," musket and carbine, presented by Mr. Anthony, upon concluding which, there being no further business for this day, the board adjourned to meet again to-morrow, 22d instant, at 11 o'clock a. m.

## EIGHTH DAY.

WASHINGTON, D. C., *March 22, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all members and recorder.

The board then proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms:

Peabody arm—carbine—presented by Mr. Anthony; one hundred shots fired; no failure. Average firing, fifteen shots per minute.

Miller rifle—carbine—presented by Mr. G. W. Miller. On the fifty-fourth shot, the tail of the plunger broke; carbine withdrawn for repairs.

Miller's breech-loading gun, for modification of Springfield musket, No. 1—presented by Mr. Miller; one hundred shots fired without failure. Average firing, eleven shots per minute.

Peabody arm—musket—presented by Mr. Anthony; one hundred shots fired, without failure. Average firing, fifteen shots per minute.

Hayden's carbine—presented by Mr. Hayden; one hundred shots fired. In firing the first eleven from the magazine, three snapped, but discharged on the second fire; third eleven, one snapped, going on second fire; fourth eleven, one snapped, going on second fire; fifth eleven, an examination was made of the cartridges, which were manufactured by the Sage Ammunition Works, and claimed by Mr. Hayden to be defective; sixth eleven, the carbine did not eject the shell on three shots. After firing seventy of the above cartridges, furnished by Mr. Hayden, cartridges furnished by government, none of which failed, were made use of without the magazine. Average firing thus, six shots per minute.

Robertson & Simpson's carbine—presented by Mr. B. N. Allen; one hundred shots fired without failure. Average firing, nine shots per minute.

Armstrong & Taylor's carbine—presented by Mr. Armstrong; one hundred shots fired without failure. Average firing, fourteen shots per minute.

National arm—carbine—presented by Mr. Bergen; one hundred shots fired without failure. Average firing, twelve shots per minute.

Wilson & Flather's gun, for modification of Springfield musket—presented by Mr. Wilson; ninety-four shots fired; nine shots snapped; spring reported weak. On the twenty-fifth fire the breech-piece stuck, and in order to remove the cartridge, it was necessary to introduce the rammer; cartridge withdrawn: twenty-seventh shot, shell stuck; thirty-sixth shot, breech-piece again stuck; cartridge withdrawn, and thirty-seventh also; eighty-seventh, shell stuck; reported to be obstructed by sand; eighty-ninth, same; gun reported very dirty after firing. Cartridges made use of in this trial were reported as not intended for the gun.

National arm—musket—presented by Mr. Bergen; one hundred shots fired without failure. Gun very clean after firing.

There being no further business for this day, the board adjourned to meet again to-morrow, 23d instant, at 11 o'clock a. m.

## NINTH DAY.

WASHINGTON, D. C., *March 23, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, the members and the recorder.

The board proceeded to an examination of the Coleman patent—carbine—presented by Mr. Callender; upon concluding which, the board proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms:

Triplett & Scott's—carbine—presented by Mr. Doolittle; one hundred shots fired; thirteen snapped; thirtieth shot, cartridge withdrawn. Cartridges manufactured by Fitch, Van Vechten & Co. Average firing with magazine, six shots in thirty-five seconds; without magazine, nine shots per minute.

Miller's gun, for modification of Springfield musket, No. 1—presented by Mr. Miller; one hundred shots fired; three snapped; cartridges reported as defective, the shells being too small. In one of these cases, the powder burnt the eye. Average firing, seven shots per minute.

Miller rifle—carbine—withdrawn 22d instant—presented by Mr. Miller; one hundred shots fired; eighty-third fire breech-pin caught, the hand being slippery; gun quite cool after firing. Average firing, eleven shots per minute.

Coleman patent—carbine—presented by Mr. Schneider; one hundred shots fired; sixtieth fire, catch caught; one shell too large for insertion; gun quite clean after firing. Average firing, eight shots per minute.

There being no further business for this day, the board adjourned to meet again on Monday, 26th instant, at 11 o'clock a. m.

## TENTH DAY.

WASHINGTON, D. C., *March 26, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to an examination of the following arms:

Sharp's arm—carbine—presented by Mr. Palmer.

Poultney musket—presented by Mr. Poultney.

There being no further business for this day, the board adjourned to meet again to-morrow, 27th instant, at 11 o'clock.

## ELEVENTH DAY.

WASHINGTON, D. C., *March 27, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to an examination of the following named arms:

Gray's arm, for modification of Springfield musket, presented by Mr. Bucklin.

Smith's carbine—presented by Mr. Poultney.

There being no further business for this day, the board adjourned to meet again to-morrow, 28th instant, at 11 o'clock a. m.

## TWELFTH DAY.

WASHINGTON, D. C., *March 28, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to an examination of the Remington arm, presented by Mr. Remington; upon concluding which, the board proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms:

Gray's arm, for modification of Springfield musket, presented by Mr. Gray; one hundred shots fired; ninety-seventh shot snapped; cartridge reported as defective; breech-piece expanded and ejector did not work perfectly; gun quite clean after firing. Average, seven shots per minute.

Sharp's arm—rifle, spring ejector—presented by Mr. Lawrence. One hundred shots fired; rifle powder; average, seventeen shots per minute.

Whereupon the board adjourned to meet again to-morrow, 29th instant, at 1 o'clock a. m.

#### THIRTEENTH DAY.

WASHINGTON, D. C., *March 29, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to an examination of Berdan's arms Nos. 1, 2, and 3, presented by Mr. Berdan; upon concluding which, the board proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms:

Sharp's arm—carbine—short extractor; presented by Mr. Lawrence. One hundred shots fired; gun quite clean after firing; average, eighteen shots per minute.

Berdan's plan for modification of Springfield musket, No. 2, presented by Mr. Stickney. One hundred shots fired; two snapped; cartridges reported as defective; one cartridge withdrawn; gun quite clean after firing; average, eleven shots per minute.

Berdan's musket, No. 3, presented by Mr. Berdan. One hundred shots fired; average, eleven shots per minute.

Berdan's plan for modification of Springfield musket, No. 1—centre primed cartridge, 75 grains rifle powder, 500 grains lead—presented by Mr. Berdan. One hundred shots fired; four snapped; cartridges reported as defective and withdrawn; average, fifteen shots per minute.

There being no further business for this day, the board adjourned to meet again on Monday, April 2, at 11 o'clock a. m.

#### FOURTEENTH DAY.

WASHINGTON, D. C., *April 2, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to an examination of Ball's repeating and self-loading arm—carbine—presented by Mr. Lawson; upon concluding which, the board proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms:

Ball's repeating and self-loading arm—carbine—presented by Mr. Lawson. One hundred shots fired; average, nine shots in twenty-seven seconds, with magazine; thirteen shots per minute without magazine.

Poultney musket, presented by Mr. Poultney. One hundred shots fired; average, ten shots per minute.

There being no further business for this day, the board, under the authority of the Lieutenant General, adjourned, to meet again on Friday, 6th instant, at 11 o'clock a. m., to enable the president of the board to attend a meeting of the retiring board in Philadelphia.

#### FIFTEENTH DAY.

WASHINGTON, D. C., *April 6, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to an examination of the following named arms :

Remington arm, No. 2—carbine—new arm, with outside hammer.

Hubbell's arm, No. 1 ; plan for modification of Springfield musket.

Hubbell's arm, No. 2 ; plan for modification of Springfield musket.

Upon concluding which, the board proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms :

Remington arm, No. 1—carbine—presented by Mr. Rider. One hundred shots fired very rapidly. Barrel and working parts very hot after firing. Average, fifteen shots per minute.

Poultney musket, by Mr. Poultney. Firing of second hundred rounds to test the relative degree of heat of barrel, &c., with Remington arm, No. 2. Barrel hot, but hammer and lever cool.

Remington arm, No. 2—carbine—presented by Mr. Remington. One hundred shots fired ; barrel equally as hot as Poultney musket ; hammer outside thumb latch also hot.

Whereupon the board adjourned to meet again to-morrow, 7th instant, at 11 o'clock a. m.

#### SIXTEENTH DAY.

WASHINGTON, D. C., *April 7, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to an examination of Miller's plan for modification of Springfield musket, No. 2 ; upon concluding which, the board proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms :

Hubbell's plan for modification of Springfield musket, No. 1, presented by Mr. Hubbell. One hundred shots fired ; average, six shots per minute. Breech-piece worked hard. Operator fired slowly throughout the trial.

Remington arm—plan for new arm, musket or carbine ; carbine No. 3, presented by Mr. Remington. One hundred shots fired ; average, fifteen shots per minute.

Whereupon the board adjourned to meet again on Monday, 9th instant, at 11 o'clock a. m.

#### SEVENTEENTH DAY.

WASHINGTON, D. C., *April 9, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members except Colonel Benton, from whom a communication was presented, stating that he was detained by sickness ; and present the recorder.

Mr. Poultney presented Smith's carbine, previously examined by the board, now modified to admit of the use of the government cartridge.

The board then proceeded to an examination of the following arms, presented by Brevet Brigadier General B. S. Roberts, United States army :

1. Plan for modification of Springfield musket—carbine.
2. Plan for modification of Springfield musket—smooth-bore musket, No. 1.
3. Plan for modification of Springfield musket—rifled musket.
4. Plan for modification of Springfield musket—smooth-bore musket, No. 2.

There being no further business for this day, the board adjourned to meet again to-morrow, 10th instant, at 11 o'clock a. m.

#### EIGHTEENTH DAY.

WASHINGTON, D. C., *April 10, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to an examination of the following named arms :

Jenks's arm, No. 1—plan for modification of Springfield musket ; presented by Mr. Jenks.

Jenks's arm, No. 2—plan for modification of Springfield musket ; presented by Mr. Jenks.

Jenks's arm, No. 3—new arm—musket ; adapted to either rim-fire or centre-rimmed cartridge, &c.

Jenks's arm, No. 4—new arm—carbine ; adapted to either rim-fire or centre-rimmed cartridge, &c.

Hammond arm—new arm—carbine ; presented by Mr. Blake.

Hammond arm—new arm—musket ; presented by Mr. Blake.

Johnston's breech-loading arm—carbine ; presented by Mr. Johnston.

Morganstern & Wilstach's single-action, breech-loading arm—musket ; presented by Mr. Morganstern.

Whereupon the board proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms :

Hubbell musket, No. 2—plan for modification of Springfield musket or new gun—presented by Mr. Hubbell ; one hundred shots fired. Average, eight per minute.

Miller's plan, for modification of Springfield musket, No. 2—presented by Mr. Miller ; one hundred shots fired. Average, ten per minute.

Roberts's arm, No. 1—plan for modification of Springfield musket—carbine ; taper of cartridge, .05 ; presented by General Roberts ; one hundred shots fired. Average, thirteen per minute.

Morganstern & Wilstach arm—musket ; presented by Mr. Morganstern ; one hundred shots fired. Average, eleven per minute.

Jenks's arm, No. 4—carbine—new arm ; presented by Mr. Simm ; one hundred shots fired. Average, twenty-four per minute.

Whereupon the board adjourned to meet again to-morrow, 11th instant, at 11 o'clock a. m.

#### NINETEENTH DAY.

WASHINGTON, D. C., *April 11, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and witnessed the preliminary trial, by firing, of the following named arms :

Roberts's arm, No. 2—plan for modification of Springfield musket ; presented by General Roberts ; one hundred shots fired. Average, ten per minute.

Jenks's arm, No. 1—plan for modification of Springfield musket ; presented by Mr. Deen. On twenty-ninth fire shell stuck fast—due to the swell of the case where it bears on the extractor ; piece withdrawn for repairs.

Jenks's arm, No. 3—new arm—musket ; calibre, .52 ; presented by Mr. Simm ; one hundred shots fired ; bearing of the case on the extractor not direct. Average, ten shots per minute.

Roberts's arm, No. 3—rifle—presented by General Roberts ; one hundred shots fired ; seven shots snapped, owing to defective cartridge ; rear of case swollen, due to its bearing not being true. Average, thirteen shots per minute.

Jenks's arm, No. 2—plan for modification of Springfield musket ; presented by Mr. Simm ; one hundred shots fired. Average, nine shots per minute.

Hammond arm—carbine—presented by Mr. Hammond ; one hundred shots fired ; breech-piece quite cool after firing. Average, seventeen shots per minute.

Johnston arm—carbine—presented by Mr. Klanche ; one hundred shots fired ; considerable difficulty experienced in getting out case, due to extractor taking back shell ; slight excess of thickness of rim prevents breech-piece from turning. Average, eight shots per minute.



Hammond arm—rifled musket—presented by Mr. Hammond; one hundred shots fired. Average, sixteen shots per minute.

Whereupon the board adjourned to meet again to-morrow, 12th instant, at 11 o'clock a. m.

#### TWENTIETH DAY.

WASHINGTON, D. C., *April 13, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder. The board proceeded to an examination of the following named arms:

Root arm—plan for modification of Springfield musket; presented by General Franklin.

Burke arm—plan for modification of Springfield musket; presented by Mr. Burke.

Cochran arm—new arm; presented by Mr. Cochran.

The board then proceeded to the arsenal and witnessed the preliminary trial by firing, of the following named arms:

Root arm—presented by Mr. Thier; one hundred shots fired. Average, sixteen shots per minute.

Cochran arm—presented by Mr. Cochran—with Lee's cartridge, being a greater taper than those of government; three snapped; one withdrawn, the firing pin having marred the case. Average, twelve shots per minute. Mr. Cochran then fired his arm twice, with the breech-piece pin removed, to show that there was no strain upon the pin, and therefore no tendency to throw out the breech-piece.

There being no further business for this day, the board adjourned to meet again to-morrow, 13th instant, at 11 o'clock a. m.

#### TWENTY-FIRST DAY.

WASHINGTON, D. C., *April 13, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and there witnessed the preliminary trial by firing, of the following named arms:

Burke arm—plan for modification of Springfield musket; 12th shot, piece withdrawn; the case adheres to the chamber so closely that the extractor will not work.

Smith arm—musket—with Poultney cartridge; 50th shot, piece withdrawn on account of cartridge bursting.

There being no further business for this day, the board adjourned to meet again on Monday, 16th instant, at 11 o'clock a. m.

#### TWENTY-SECOND DAY.

WASHINGTON, D. C., *April 16, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members except Brevet Brigadier General Hagner and Brevet Colonel Benton, from whom communications were presented, stating that they were detained by sickness; and present the recorder.

Owing to the absence of these members, the board adjourned to meet again to-morrow, 17th instant, at 11 o'clock a. m.

#### TWENTY-THIRD DAY.

WASHINGTON, D. C., *April 17, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members except Brevet Brigadier General Hagner and Brevet Colonel

ton, from whom communications were presented, stating that they were de-  
ned by sickness; and present the recorder.

Owing to the absence of these members, the board adjourned to meet again  
morrow, 18th instant, at 11 o'clock a. m.

#### TWENTY-FOURTH DAY.

WASHINGTON, D. C., *April* 18, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all  
e members except Brevet Brigadier General Hagner and Brevet Colonel  
nton; and present the recorder.

Communications were presented from these officers, stating that they were  
cessarily absent on account of sickness, owing to which the board adjourned  
meet again to-morrow, 19th instant, at 11 o'clock a. m.

#### TWENTY-FIFTH DAY.

WASHINGTON, D. C., *April* 19, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all  
e members and the recorder.

The board proceeded to an examination of the following arms previously  
ithdrawn and now again presented:

Burke arm, plan for modification of Springfield musket—presented by Mr.  
Burke.

Hammond arm—rifled musket—presented by Mr. Vail.

After which, upon motion, the board adopted the following resolution:

That the experimental firings by the board shall be open to visitors, provided  
hey do not interfere in any way with the experiments.

Whereupon the board adjourned to meet again to-morrow, 20th instant, at  
11 o'clock a. m.

#### TWENTY-SIXTH DAY.

WASHINGTON, D. C., *April* 20, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all  
the members and the recorder.

Upon motion, the following programme for further experiments by the board  
was adopted:

I. Set aside the arms not deemed suitable for further trial; these to be  
cleaned and held by Colonel Benton, subject to the order of the board.

II. Try others—

First. For strength and durability of alteration of plan of construction.

Second. For simplicity of construction or of alteration, facility of assembling  
and dismounting, and of replacement and repair.

Third. For simplicity and safety of management and use by the soldier.

Fourth. For fouling from firing, or from dust and rust.

Fifth. For liability to become unserviceable from exposure to the weather  
and extreme changes of climate.

Sixth. For rapidity of firing.

After careful examination of mechanism, the firing to be as follows:

First. Twenty rounds from each gun, at 200 yards, 500 yards, 1,000 yards,  
making separate targets for each set. No cleaning after firing, and guns to be  
exposed to the weather, or to be sprinkled with water and exposed to dust  
after each round.

Second. Try penetration of each by firing ten rounds at thirty yards through  
targets composed of 1-inch white pine boards, placed one inch apart.

Third. Test the strength of the selected guns by firing them with the fol-  
lowing named increasing charges, viz:

Powder, 65 grains—70 grains—75 grains, with  
Bullets 2, 3, 4, respectively.

Upon motion, the following resolution was adopted :

That the Chief of Ordnance be requested to furnish the board with the result of experiments made by officers of his department, or at the Springfield armory, testing calibre, twist, length of barrel, weight of charge, of breech-loading small-arms using elongated balls; and that he cause the board to be furnished with one or more samples of the various cartridges that may have been tried and with one or more barrels (of each calibre) of those proved best between .44 and .54, fitted so that they may be fired in presence of the board.

The board then proceeded to the arsenal and witnessed the preliminary trial by firing, of the following named arms :

Fitzgerald arm—carbine—presented by Mr. Pelouge; one hundred shots fired. Average, with magazine, 7 shots in 27 seconds; without magazine, 6 per minute.

Burke arm—musket—presented by Mr. Burke. One hundred shots fired. Average, eight per minute.

Hammond arm—musket—presented by Mr. Vail. The chamber of this gun had been too much enlarged, and on the fiftieth fire the arm was withdrawn for alteration.

After which, upon careful examination, the following named arms were by vote of the board set aside, in accordance with the first paragraph of the foregoing programme :

Muskets.—1. Burke, modification of Springfield musket.

2. Cochran.

3. Jenks's, No. 1, modification of Springfield musket, withdrawn for repairs.

4. Jenks's, No. 2, modification of Springfield musket, withdrawn for repairs.

5. Jenks's, No. 3, withdrawn for repairs.

6. Morganstern and Wilstach, withdrawn for repairs.

7. Hubbell's, No. 1, modification of Springfield musket.

8. Hubbell's, No. 2, modification of Springfield musket.

9. Miller's, No. 1, modification of Springfield musket.

10. Miller's, No. 2, modification of Springfield musket.

11. Gray, modification of Springfield musket.

12. Wilson and Flather, modification of Springfield musket.

Carbines—1. Johnston.

2. Jenks's, No. 4.

3. Smith's.

4. Ball's.

5. Coleman.

6. Armstrong and Taylor.

7. Hayden.

8. Hunt.

9. Fitzgerald.

And the following arms were selected for further trial, in accordance with the second paragraph of the foregoing programme :

*Modification of Springfield musket.—Table A.*

1. Roberts's, No. 1, carbine.

No. 2, musket.

No. 3, musket.

2. Berdan, No. 1, musket.

No. 2, musket.

3. Allin's musket.

*New arm.***Muskets.**—4. Poultney.

5. Sharp, (rifled.)

6. National arm.

7. Peabody.

**Carbines.**—Remington, Nos. 1 and 2.

Sharp.

National arm.

Peabody.

8. Hammond.

9. Miller, (rifled.)

10. Robertson and Simpson.

11. Triplett and Scott.

Whereupon the board adjourned to meet again on Monday, 23d instant, at 1 o'clock a. m.

## TWENTY-SEVENTH DAY.

WASHINGTON, D. C., *April 23, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

After the transaction of preliminary business, the board proceeded to the arsenal, and continued the trial of arms as follows:

*Preliminary test of one hundred rounds.*

Spencer repeating carbine, fired by a private of the ordnance detachment. Average, with magazine, seven shots in eighteen seconds; without magazine, six shots per minute.

*Test for strength of construction.*

Miller's carbine—plan for modification of Springfield musket—rifled.

First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.) Hammer could not be moved by pressure of thumb, but required blows. After starting it worked well.

Second round, seventy grains rifle-powder, with three balls. Same difficulty with hammer again experienced, with similar result.

Third round, seventy-five grains rifle-powder, with four balls. On this round the breech-pin catch was broken, blown off, and not found; the breech-piece revolved below the line of fire; arm disabled.

Remington arm, No. 1—carbine—first round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.) The hammer could not be moved by pressure of the thumb, supposed to be due to the upsetting of metal, so as to make the hammer bind on the sides of the mortise and breech-piece. After starting by blows, the action of the lock was perfect, showing that neither tumbler nor sear was injured.

Second round, seventy grains rifle-powder, with three balls. Same difficulty with hammer experienced, with similar results.

Third round, seventy-five grains of rifle-powder, with four balls. The interlocking parts of the hammer and movable breech-piece were blown off. Arm disabled.

Whereupon the board adjourned to meet again to-morrow, 24th instant, at 11 o'clock a. m.

## TWENTY-EIGHTH DAY.

WASHINGTON, D. C., *April 24, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

After the transaction of preliminary business, the board proceeded to the arsenal and continued the trial of arms as follows :

Springfield regulation musket—(for comparison.) First round, seventy-five grains rifle-powder, with four balls, (five hundred grains each.)

Second round, eighty grains rifle-powder, with five balls, (five hundred grains each.)

Sharp's arm—carbine. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.) On this round a projection on the extractor broke, from flaw in the metal, and the extractor therefore failed to work automatically.

Second round, seventy grains rifle-powder, with three balls.

Third round, seventy-five grains rifle-powder, with four balls. (Arm withdrawn for repairs.)

Peabody arm—carbine. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.) A portion of the cartridge case bearing at the end of the extractor was broken through, forming a hole the size of the mortise in which the extractor works, and thus clogged the movement of the lever. No defect of the system.

Second round, seventy grains rifle-powder, with three balls. Shell again broken through with similar result.

Third round, seventy-five grains rifle-powder, with four balls. Shell again broken through with similar result.

Hammond arm—carbine. First round, sixty-five grains rifle powder, with two balls, (four hundred grains each.)

Second round, seventy grains rifle-powder, with three balls, (four hundred grains each.) Breech-piece cramped in opening; due to the cracking of the shell on its rim.

Third round, seventy-five grains rifle-powder with four balls; case again burst, the base being blown out and the breech-piece again cramped slightly by the wedging of this base of shell.

Remington arm, No. 2—carbine—outside hammer. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each;) the tumbler interlocked hard with the swinging breech, thus preventing the movement of the hammer. Arm disabled.

Robertson and Simpson—carbine. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each;) both extractors and stock-tip broken. Arm disabled.

Whereupon the board adjourned to meet again to-morrow, 25th instant, at 11 o'clock a. m.

#### TWENTY-NINTH DAY.

WASHINGTON, D. C., *April 25, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

Upon motion the following resolution was adopted :

That where two or more arms having the same principle of construction have been presented and one may have failed, showing defect in the principle, no other arm of same principle shall be tried unless by special vote upon the request of the inventor.

After which the board proceeded to the arsenal and continued the test of arms, as follows :

#### *Test for strength of construction.*

Spencer carbine. First round, sixty-five grains rifle-powder and two balls (four hundred grains each;) shell wedged so as to fender the opening of the

ember by the lever difficult; due to the splitting of the rim of the case and swelling of the shell.

Second round, seventy grains rifle-powder, with two balls; shell again dged; due to the enlargement of the chamber.

Third round, seventy-five grains rifle-powder, with four balls; shell wedged so ht that its base was pulled off in the effort to extract it.

Sharp's rifle. First round, sixty-five grains rifle-powder, with two balls, (four ndrd grains each.)

Second round, seventy grains with three balls.

Third round, seventy-five grains, with four balls; no difficulty experienced or defect detected throughout the trial.

Poultney musket. First round, sixty-five grains rifle-powder, with two balls, our hundred grains each.)

Second round, seventy grains with three balls; the catch was broken on this e and the gun withdrawn for repairs.

Whereupon the board adjourned to meet again to-morrow, 26th instant, at 1 o'clock a. m.

#### THIRTIETH DAY.

WASHINGTON, D. C., *April 26, 1866.*

The board met 11 o'clock a. m., pursuant to adjournment. Present, all the members and recorder.

Upon motion the following resolution was adopted:

That when an arm becomes disabled the inventor, in each case, be notified of the fact by the recorder, and that the arm is held subject to his disposal.

After which the board proceeded to the arsenal and continued the trial of arms, as follows:

#### *Preliminary test of one hundred rounds.*

Empire breech-loading carbine, presented by Mr. True. On sixty-first fire the shell burst and was wedged in the chamber; sixty-eighth fire, shell wedged in the chamber; ninety-fourth fire, shell burst and wedged in the chamber. Average, ten shots per minute.

#### *Test for strength of construction.*

Berdan arm, No. 1, (plan for modification of Springfield musket.) First round, sixty-five grains of rifle-powder, with two balls, (five hundred grains each.)

Second round, seventy grains, with three balls.

Third round, seventy-five grains, with four balls; no difficulty experienced or defect detected during the trial.

Peabody arm—musket. First round, sixty-five grains of rifle-powder, with two balls, (four hundred grains each;) some difficulty in opening the breech, due to the bursting the shell.

Second round, seventy grains, with three balls; same difficulty again in opening, owing to same cause.

Third round, seventy-five grains, with four balls; same difficulty again experienced; gun otherwise unimpaired.

Roberts arm, No. 2—plan for modification of Springfield musket. First round, sixty-five grains rifle-powder, with two balls, (five hundred grains each.)

Second round, seventy grains, with three balls; arm disabled on this round—breech-piece blown open, tail broken off, end of catch broken, part of breech-plug broken off, one bar of joint broken and joint-pin loosened and bent; guard-plate and screw through stock broken short off.

Laidley arm—carbine—presented by Brevet Major General Dyer, Chief of



Ordnance. First round, sixty-five grains rifle-powder, with two balls, (four hundred and eighty grains each.)

Second round, seventy grains of rifle-powder, with three balls; very slight difficulty experienced in opening the breech, owing to wedging of the shell.

Third round, seventy-five grains rifle-powder, with four balls; same difficulty again experienced in this round; gun otherwise unimpaired.

Allen arm—plan for modification of Springfield musket—presented by Brigadier General Dyer, Chief of Ordnance. First round, sixty-five grains rifle-powder, with two balls, (five hundred grains each.)

Second round, seventy grains rifle-powder, with three balls

Third round, seventy-five grains rifle-powder, with four balls; no difficulty experienced or defect detected during the trial.

Upon trial of the Spencer, Berdan, Peabody, and Ordnance arms, with three service charges each, after the foregoing trials, each arm worked well except the Spencer. This carbine worked well without a cartridge, but, with the cartridge in the breech, could not be closed, owing to the extractor not permitting the bottom of the case to go fully down. Upon examination it was found that a triangular piece of the metal of the barrel at the thinnest part, close to the extractor, had been broken out, and it was supposed that the rough edge at the front of the break impeded the movement of the extractor. It is evidently a fault in this carbine that so much of the metal of the band should be cut away at this point.

After which the board adjourned to meet again to-morrow, 27th instant, at 11 o'clock a. m.

#### THIRTY-FIRST DAY.

WASHINGTON, D. C., April 21, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

Upon motion the following resolution was adopted:

That application be made to the proper authority for a detail of two cavalry soldiers, (mounted,) to be furnished on such a day as the board determine, to make experiments with carbines regarding the facility with which they may be manipulated and made use of by mounted men.

After which the board proceeded to the arsenal and continued the trial of arms, as follows:

#### *For strength of construction, &c.*

Empire breech-loading carbine. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each;) breech-piece burst, and the carbine was rendered unserviceable.

Spencer arm, musket. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each;) shell wedged, rendering it difficult to open the breech-piece.

Second round, seventy grains, with three balls shell wedged again, and on this round the breech-piece could not be opened without extra force.

Third round, seventy-five grains, with four balls; breech-piece could not be opened, due to the bulging of the barrel, which is too much thinned at the part where it is flattened for the extractor, and the shell swells into this bulge.

#### *Facility of working.*

The following named arms were placed in the hands of a detail from the ordnance detachment, of five men, and, in the presence of the board, each arm was fired twenty rounds, service charges, by each man of the detail: Sharp's arm.

Peabody arm, musket, Hammond arm, carbine, Berdan arm, plan for modification of Springfield musket. After which the board adjourned to meet again Monday, 30th instant, at 11 o'clock a. m.

## THIRTY-SECOND DAY.

WASHINGTON, D. C., *April* 30, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal, and continued the trial of arms as follows; for facility of manipulation; and the same detail employed on 27th instant. Allin arm, plan for modification of Springfield musket; Laidly arm, carbine, new m.

*For penetration.*

Target one inch white pine boards placed one inch apart, distance thirty yards

Peabody arm, musket :

55 grains powder, 400 grains lead. { 1st round, through 10th board and in 11th.  
2d round, through 10th board.  
3d round, through 12th board and in 13th.

Sharps' rifle :

55 grains powder, 400 grains lead. { 1st round, through 10th board and in 11th.  
2d round, through 10th board and in 11th.  
3d round, through 11th board and in 12th.

Berdan :

55 grains powder, 500 grains lead. { 1st round, through 11th board and in 12th.  
2d round, through 11th board and in 12th.  
3d round, through 12th board.

Spencer's carbine :

45 grains powder, 400 grains lead. { 1st round, through 10th board and in 11th.  
2d round, through 11th board and in 12th.  
3d round, through 10th board and in 11th.

Allin :

65 grains powder, 500 grains lead. { 1st round, through 7th board and in 8th.  
2d round, through 12th board.  
3d round, through 10th board.

Hammond carbine :

65 grains powder, 400 grains lead. { 1st round, through 10th board.  
2d round, through 10th board and in 11th.  
3d round, through 11th board.

After which the board adjourned to meet again to-morrow, May 1, at 11 o'clock a. m.

## THIRTY-THIRD DAY.

WASHINGTON, D. C., *May* 1, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder. Upon motion the following resolution was adopted :

That the Chief of Ordnance be requested to furnish for trial by the board as soon as possible, a breech-loading arm, having a barrel of forty-four or forty-five calibre, chambered to fire a charge of seventy grains of powder, and four hundred and eighty of lead, having the cylinder case of fifty-two or fifty-four calibre,

and that five hundred rounds of suitable cartridges be furnished with the gun. The board do not prescribe any particular plan of breech-loader, as this may depend upon the convenience of the department, but would prefer one of either the Peabody model or that of the carbine made at the United States armory, either of which is supposed to be strong enough to bear the above charge.

The board then proceeded to an examination of Howe & Jacobs's breech-loading musket, plan for modification of Springfield musket, presented by Mr. Howe. After which the board adjourned to meet again to-morrow, 2d instant, at 11 o'clock a. m.

#### THIRTY-FOURTH DAY.

WASHINGTON, D. C., *May 2, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal, and continued the trial of arms, as follows:

#### *For strength of construction.*

National arm, musket—First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.)

National arm, musket—Second round, seventy grains rifle-powder, with three balls, (four hundred grains each.)

National arm, musket—Third round, seventy-five grains rifle-powder, with four balls. Slight difficulty experienced in opening breech-piece in this round.

Sharp's arm, carbine—Notch extractor broken, and withdrawn April 24.—First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.)

Second round, seventy grains rifle-powder, with three balls. Slight difficulty experienced in opening breech piece on this round.

Third round, seventy-five grains rifle-powder with four balls.

Remington, arm No. 2, carbine, outside hammer. This arm was again tried, owing to the fact that upon investigation it had been found that the failure to work freely on previous trial, April 24, was because it was not properly assembled.

First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.) Difficulty experienced in opening breech-piece on this round.

Second round, seventy grains of rifle-powder, with three balls. Base of shell two-thirds broken off; hammer could not be moved by pressure of thumb, but was started by a slight blows; shell drawn out by a hook.

Third round, seventy-five grains rifle-powder, with four balls. Hammer again stuck, and was started by a slight blow; shell unimpaired.

The two following arms were submitted for trial of strength by the Chief of Ordnance, as specimens of the Remington carbine, made by contract. The hammer in each works inside the movable breech-piece.

No. 1. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.) Second round, seventy grains rifle powder with three balls. Hammer blown entirely off; tail of breech frame broken.

No. 2. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.) Second round, seventy grains rifle-powder, with three balls. Base of shell broken off and hammer difficult to move. Third round, seventy-five grains rifle-powder, with four balls. Base of shell blown off; hammer blown half open; slight escape of gas in front of breech-piece; shell not extracted, not having been drawn out by the hook. The arm worked well.

#### *Preliminary test of one hundred rounds.*

Howe and Jacobs's arm—plan for modification of Springfield musket—presented by Mr. Howe. Average, nine shots per minute.

Facility of manipulation, with same detail employed on 30th ultimo—national arm musket.

After which three rounds, service charges, were fired from the national arm and from Sharp's carbine.

Whereupon the board adjourned to meet again to-morrow, 3d instant, at 11 o'clock a. m.

#### THIRTY-FIFTH DAY.

WASHINGTON, D. C., May 3, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder. The recorder presented Special Orders No. 204, from the War Department, directing the board to receive no arms after May 21, and to file its report June 4.

The board proceeded to the arsenal and continued the trial of arms as follows:

#### *Preliminary test of one hundred rounds.*

Hammond arm—musket—previously withdrawn—presented by Mr. Hammond. Average, thirteen shots per minute, firing with new ammunition pouch.

Jenks's arm, No. 2—new arm—musket—previously withdrawn—presented by Mr. Jenks. Average, twenty-five shots per minute.

Jenks's arm, No. 1.—previously withdrawn—plan for modification of Springfield musket. Average, eleven shots per minute.

#### *Test for strength of construction.*

Howe and Jacobs's plan for modification of Springfield musket.

First round. Sixty-five grains of rifle-powder, with two balls, (five hundred grains each.) Head of extractor blown out, breaking stock; barrel thrown back in its bed so as to break the stock through, rear of the side screw-hole. Arm totally unserviceable.

Hammond arm—musket. First round, sixty-five grains of rifle-powder, with two balls, (four hundred grains each.)

Second round, seventy grains rifle-powder, with three balls; some difficulty experienced in starting the hammer and unlocking the breech-piece; base of shell blown off.

Third round, seventy-five grains powder, with four balls; some difficulty in moving hammer and breech-piece experienced on this round. The difficulty is due to compression by force of the explosion of the metal of the side of the nose of the hammer resisting the tendency of breech-piece to turn to the left.

Root arm—plan for modification of Springfield musket. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each;) breech-piece blown to the rear and stuck fast, so that it could not be removed. Piece disabled.

Jenks's arm, No. 1. First round, sixty-five grains rifle-powder, two balls. The extractor broke and clogged the movements of the breech-piece so that it could not be opened until the fragments were removed.

Jenks's arm, No. 3. First round, sixty-five grains rifle-powder, with two balls, (five hundred grains each;) breech-piece difficult to open.

Second round, seventy grains, with three balls; same difficulty experienced as in first round.

Third round, seventy-five grains, with four balls; operation of lock and breech-piece correct; but the front guard-plate screw broke or flew out, and the plate was bent and broken. The stock was split through the hole for guard-screw, and the split extended through the small of stock towards the butt; working parts in good order, and three rounds of service-charges fired from the shoulder without trouble. Three rounds of service-charges also fired from Hammond musket.

*Penetration.*—(Same target as made use of on the 2d instant

Remington arm—outside hammer :

65 grains powder,  
400 grains lead. { 1st round, through 9th board.  
2d round, through 9th board.  
3d round, through 11th board.

Hammond arm, musket :

65 grains powder,  
400 grains lead. { 1st round, through 12th board and in 13th.  
2d round, through 11th board and in 12th.  
3d round, through 11th board and in 12th.

Laidley arm :

70 grains powder,  
480 grains lead. { 1st round, through 10th board and in 11th.  
2d round, through 10th board and in 11th.  
3d round, through 12th board.

After which the board adjourned to meet again to-morrow, 4th instant, at 11 o'clock a. m.

#### THIRTY-SIXTH DAY.

WASHINGTON, D. C., *May 4, 1866.*

The board met at 12 o'clock a. m., pursuant to adjournment. Present, all the members and recorder.

The board proceeded to the arsenal and continued the trial of arms, as follows:

#### *For strength of construction.*

Poultney arm—musket—previously withdrawn for repairs. First round sixty-five grains rifle-powder, with two balls, (four hundred grains each.)

Second round, seventy grains rifle-powder, with three balls ; hook broke and blew open the breech-piece, splitting the stock in front of lock. Arm disabled and withdrawn.

#### *Test for accuracy.*

The following named arms were fired, and the target records are appended hereto, marked as follows :

Allin—modification of Springfield musket,	marked "A" 1
Peabody—musket,	marked "A" 2
Sharp's—rifled,	marked "A" 3
National arm—musket,	marked "A" 4
Hammond arm—musket,	marked "A" 5
Laidley arm—rifle,	marked "A" 6
Peabody arm—Springfield rifle,	marked "A" 7

Whereupon the board adjourned to meet again on Monday, 7th instant, 11 o'clock a. m.

#### THIRTY-SEVENTH DAY.

WASHINGTON, D. C., *May 7, 1866.*

Board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The recorder laid before the board a letter from the Adjutant General, dated Washington, April 26, 1866, transmitting papers relative to certain infantry and cavalry accoutrements originated by Brevet Lieutenant Colonel J. H. Mizner, captain second United States cavalry, with the request that these improvements or inventions might be examined by the board when presented.

The board proceeded to the arsenal and there examined the plan for infantry and cavalry accoutrements presented by Colonel Mizner, who explained their adaptation and use ; after which, the trial of arms was continued as follows:

*Preliminary test of 100 rounds.*

Smith's carbine, presented by Mr. Poultney. One hundred shots fired; average, twelve per minute. Ninth shot, the cartridge exploded before the hammer was closed, throwing out the shell and burning the wrist of the operator.

*Accuracy.*

The following named arms were fired, and the target records are appended hereto and marked as follows:

National arm, carbine, marked B<sup>1</sup>; Sharp's arm, carbine, marked B<sup>2</sup>; Peabody arm, carbine, marked B<sup>3</sup>; Spencer's arm, carbine, marked B<sup>4</sup>; Berdan, modification Springfield musket, marked B<sup>5</sup>.

After which the board adjourned to meet again to-morrow, 8th instant, at 11 o'clock a. m.

## THIRTY-EIGHTH DAY.

WASHINGTON, D. C., May 8, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board received and examined the model of an improvement upon Hayden's repeating carbine; after which, upon proceeding to the arsenal, the trial of arms was continued as follows:

*Accuracy.*

The following named arms were fired, and the target records are appended hereto, marked as follows:

National arm, musket, marked C<sup>1</sup>; Sharp's arm, musket, marked C<sup>2</sup>; Allin arm, modification Springfield musket, marked C<sup>3</sup>; Hammond arm, musket, marked C<sup>4</sup>; Laidley arm, musket, marked C<sup>5</sup>.

After which the board adjourned to meet again to-morrow, 9th instant, at 11 o'clock a. m.

## THIRTY-NINTH DAY.

WASHINGTON, D. C., May 9, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and continued the trial of arms, as follows:

*Preliminary test of one hundred rounds.*

Roberts's arm, No. 5, second plan for modification of Springfield musket; average, thirteen per minute; cartridges handed to the operator by an assistant.

*Test for strength of construction.*

Ball's patent repeating carbine. First round, sixty-five grains rifle-powder, with two balls (four hundred grains each; ) second round, seventy grains rifle powder, with three balls; lever was blown back, throwing the breech-block down, and the stock was split; third round, seventy-five grains rifle-powder, with four balls; chamber blown open as before, and tail of guard broken off; the shell breaks around the part supported by the extractor.

*Accuracy.*

The following named arms were fired, and the target records are appended hereto, marked as follows:

Berdan's arm, modification Springfield musket, marked D<sup>1</sup>; Sharp's carbine, marked D<sup>2</sup>; Peabody, Springfield musket, marked D<sup>3</sup>; Peabody rifle, marked D<sup>4</sup>.



After which the board adjourned to meet again to-morrow, 10th instant, at 10 o'clock a. m.

FORTIETH DAY.

WASHINGTON, D. C., May 10, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal, and continued the trial of arms as follows:

*Preliminary test of one hundred rounds.*

Morganstern & Wilstach, plan for modification of Springfield musket, previously withdrawn; average, fourteen per minute.

Jenks's arm, No. 3, new arm, rifle, previously withdrawn; average, seventeen per minute.

*Test for strength of construction.*

Morganstern & Wilstach arm. First round, sixty-five grains rifle-powder, with two balls. The escape of gas through the slot for the extractor, on the left of the barrel, broke the stock; the breech-piece wedged and could not be moved; arm withdrawn.

Jenks's arm, No. 3. First round, sixty-five grains rifle-powder, with two balls; second round, seventy grains rifle-powder, with three balls; third round, seventy-five grains rifle-powder, with four balls.

Allin's plan for modification of Springfield musket, with tube reducing the calibre from fifty-eight to fifty. First round, sixty-five grains rifle-powder, with two balls; second round, seventy grains rifle-powder, with three balls; third round, seventy-five grains rifle-powder, with four balls.

Roberts's arm, No. 5, new plan for modification of Springfield musket. First round, sixty-five grains rifle-powder, with two balls, (five hundred grains each; second round, seventy grains rifle-powder, with three balls, (five hundred grains each.) Escape of gas through cut for breech-piece broke the stock, and the shell so wedged that the breech-piece could not be moved nor the chamber opened: arm disabled.

Mr. Hayden made application to withdraw his carbine for the purpose of constructing models, which application was granted, and the trial was continued, as follows:

*Test for accuracy*

The following named arms were fired, and the target records are appended hereto, marked as follows: Peabody arm, carbine, marked E<sup>1</sup>; Spencer arm, carbine, marked E<sup>2</sup>; National arm, carbine, marked E<sup>3</sup>; Allin arm, Springfield musket reduced, marked E<sup>4</sup>.

After which the board adjourned to meet again to-morrow, 11th instant, at 11 o'clock a. m.

WASHINGTON, D. C., May 11, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and made an examination of the following named arms: Meigs's patent plan for modification of Springfield muskets, presented by Mr. Alberger; Maynard arm—musket—with Maynard cartridge and ordinary percussion cap; Maynard arm—carbine—with Maynard cartridge, centre primed.

The board then continued the trial of arms as follows:

*Preliminary test of one hundred rounds.*

Maynard arm, musket, with Maynard cartridge, ordinary percussion cap. Each case has a handle by which it is withdrawn. Two shots snapped, going on second fire; one snapped, and withdrawn. Average, six shots per minute; considerable escape of gas at the breech. Spectators were excluded from this trial, at the request of the inventor. Maynard arm—carbine—with Maynard cartridge, centre primed. On tenth shot arm withdrawn for repairs, the spring being too weak.

*Strength of construction.*

Meigs's patent. First round, seventy-five grains powder, with four balls. Before firing the spring of safety catch, under and to the rear of guard was broken, and the catch was put into its place, and the arm loaded as above. Breech arrangement clogged, so that it could only be opened by blows; shell not broken. The catch being broken the whole guard was moved to the rear, and there was no fulcrum for the trigger. Under these circumstances, the second fire of seventy grains with three balls was made by wedging behind the guard. The result, as in the first round, was without detriment to the breech-piece, but the gun was disabled.

*Test for accuracy.*

The following named arms were fired, and target records are hereto appended, marked as follows: Peabody rifle, marked F<sup>1</sup>; Laidley rifle, marked F<sup>2</sup>.

Whereupon the board adjourned to meet again on Monday, 14th instant, at 11 o'clock a. m.

## FORTY-FIRST DAY.

WASHINGTON, D. C., *May* 14, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and renewed the examination of Colonel Mizner's accoutrements for cavalry and infantry. Colonel Mizner having again appeared before the board, submitted further explanations of his accoutrements, after which, and upon full consideration, the following recommendation was adopted:

That for trial in the cavalry a number of haversacks of this pattern be issued to a portion of the men in certain companies of cavalry in active service on the plains or in the field, the remainder of the men of these companies to have those now in use, in order that a competition test may be had.

And it was further—

*Resolved*, That the board is not prepared to recommend this haversack for infantry, or the other accoutrements for adoption in either arm of the service.

After which the board continued the trial of arms as follows:

*Preliminary test of one hundred rounds.*

Meigs's patent, plan for modification of Springfield musket, previously withdrawn. Presented again by Mr. Alberger; average, seven per minute.

*Test for strength of construction.*

Remington navy carbines. First round, sixty-five grains rifle-powder, with two balls; second round, seventy grains rifle-powder, with three balls; hammer a little harder than usual to move; third round, seventy-five grains rifle-powder,

with four balls; hammer could not be moved by the hand, and was opened by blows; head of cartridge blown off; after extracting the shell three service charges were fired, and the arm worked well.

*Accuracy.*

The following named arms were fired, and the target records are appended hereto, marked as follows: Berdan arm, modification of Springfield musket, marked G<sup>1</sup>; Sharp arm, rifle, marked G<sup>2</sup>.

After which the board adjourned to meet again to-morrow, 15th instant, at 11 o'clock a. m.

FORTY-SECOND DAY.

WASHINGTON, D. C., May 15, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and received and examined the following named arms: Henry arm, repeating rifle, Nos. 1, 2, and 3; Henry arm, repeating carbine, Nos. 2 and 3, presented by Mr. Winchester; Sturtevant rifle, presented by Mr. Sturtevant.

In the case of the Henry arm, it was

*Resolved*, That the rifle No. 1, being of calibre forty-four, be at once fired one hundred rounds service charges, and that the test for strength of this arm be deferred until after other trials.

After which the trials of arms was continued as follows:

*Preliminary test of one hundred rounds.*

Henry arm, repeating rifle No. 1. Average, with magazine containing fourteen rounds and one in chamber, the magazine was discharged in twenty-three seconds, and discharged and reloaded in fifty seconds; without magazine, fourteen per minute. In the third shot from magazine the head of the shell was blown off, and the next ball entered the shell, thus preventing the further action of the breech-piece until the shell was removed; tenth shot, head of shell again blown off, but no interruption took place; five snapped, but went on second fire.

Remington arm—navy carbine, presented by Mr. Remington; average seventeen per minute.

*Test for strength of construction.*

Morganstern and Wilstach—plan for modification of Springfield musket, previously withdrawn. At the request of the inventor the order of increasing charges was reversed.

First round, seventy-five grains, rifle-powder, with four balls. The escape of gas from the breech through the slot for the extractor split the stock. The shell burst in the gun and clogged the movement of the breech-piece; arm disabled.

*Accuracy and penetration.*

The following named arms were fired, and the target records are appended hereto, marked as follows:

Allin arm—Springfield musket reduced, marked H<sup>1</sup>; Laidley rifle, H<sup>2</sup>.

Whereupon the board adjourned to meet again to-morrow, 16th instant, at 11 o'clock a. m.

## FORTY-THIRD DAY.

WASHINGTON, D. C., *May 16, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and made an examination of the following named arms :

Modification of Springfield musket on the Root principle, presented by Mr. Franklin.

Norny patent—plan for modification of Springfield musket, presented by Mr. Norny.

Model of the Fogarty repeating rifle, repeating and single breech loader, presented by Mr. Hallett.

In the case of this arm the machinery for opening and closing the breech, and for feeding from the magazine is complete, and promises to work very satisfactorily in the finished arm. The inventor, however, is not able to complete this in time to present it to the board for trial. The board consider that in the points above mentioned the inventor displays great merit. After which the trial of arms was continued as follows :

*Preliminary test of one hundred rounds.*

Norny patent—plan for modification of Springfield musket. Average, the cartridges being handed to the operator, eight shots per minute.

*Test for strength of construction.*

Modification of Springfield musket, on the Root principle.

First round, sixty-five grains rifle-powder, with two balls.

Second round, seventy grains rifle-powder, with three balls.

Third round, seventy-five grains rifle-powder, with four balls.

Slight difficulty experienced in opening the breech on this round ; gun otherwise worked well. Three service charges were then fired from it. After which the board adjourned to meet again to-morrow, 17th instant, at 11 o'clock a. m.

## FORTY-FOURTH DAY.

WASHINGTON, D. C., *May 17, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members except Brevet Major General Buchanan, and present the recorder. A note was presented from General Buchanan stating that he was detained at home by sickness.

The board proceeded to the arsenal and continued the examination of arms.

Mr. Anthony, representing the Peabody arm was admitted, and stated to the board that in case the board should consider that arm worthy of partial introduction for trial in the field, the company is now fully prepared to make them, and would be willing to furnish any number, large or small, at such price as the government may consider fair.

After which the trial of arms was continued as follows :

*Strength of construction.*

Poultney musket, first round sixty-five grains rifle-powder, with two balls.

Poultney musket, second round seventy grains rifle-powder, with three balls.

Poultney musket, third round seventy-five grains rifle-powder, with four balls.

Firing pin blew out on each round.

*Accuracy.*

Arms marked as follows:

Norny arm—modification of Springfield musket, marked I<sup>1</sup>.

Laidley arm—rifle, marked I<sup>2</sup>.

After which the board adjourned to meet again to-morrow, 18th instant, at eleven o'clock a. m.

## FORTY-FIFTH DAY.

WASHINGTON, D. C., *May* 18, 1866.

The board met at the Ordnance Office on account of the inclemency of the weather, at eleven o'clock a. m. Present, Generals Buchanan, Hagner, and Griffin, Colonels Porter and Owen, and the recorder. Owing to a misapprehension as to the proper place of meeting, the remaining members of the board General Hancock and Colonel Benton, met at the arsenal, and there being a quorum present, adjourned to meet again on the following day.

The quorum at the Ordnance Office proceeded to an examination of E. S. Wright's patent carbine presented by Mr. Wood.

After which the board adjourned to meet again on Monday, 21st instant, at eleven o'clock a. m.

## FORTY-SIXTH DAY.

WASHINGTON, D. C., *May* 21, 1866.

The board met at eleven o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and examined the following named arms: Henry repeating carbine, No. 1, presented by Mr. Winchester.

Alexander's patent carbine, presented by Mr. Alexander.

Union breech-loader—repeating carbine—presented by Mr. Jackson.

Mix & Horton arm—new arm—musket; presented by Mr. Mix.

Richardson arm—plan for modification of Springfield musket; presented by Mr. Mix.

Underwood patent—new arm—carbine; presented by Mr. Underwood. This arm had been hastily constructed, and was not in condition to undergo the trial by increasing charges.

Gray arm, No. 2—modification of Springfield musket.

Burton arm—new arm—carbine; presented by Mr. Burton. This arm was also not in condition to undergo a trial for strength by increasing charges.

Remington arm—plan for modification of Springfield musket; presented by Mr. Remington.

Roberts arm—improvement of the Roberts plan for modification of Springfield musket, No. 2; presented by the recorder of the board, with letter from Mr. Roberts.

Morganstern & Wilstach—improvement of plan for modification of Springfield musket; previously withdrawn; presented by Mr. Morganstern.

Berdan arm, No. 4—plan for modification of Springfield musket; presented by Mr. Berdan.

Laidley arm—new arm—musket; presented by Col. Laidley.

Maynard carbine—previously withdrawn, with improved cartridges.

After which, upon motion, the following resolution was adopted:

In testing magazine guns for strength, the magazine should be full of cartridges, in order to test the danger from exploding the reserved cartridges.

The trial of arms was then continued as follows:

*Preliminary test of one hundred rounds.*

Henry repeating carbine, No. 1—presented by Mr. ———. Average with magazine containing eleven charges, discharged in eight seconds; discharged and reloaded in twenty-three seconds. Without magazine, eighteen shots per minute.

Alexander patent—carbine—presented by Mr. Alexander. Average, seventeen per minute.

Mix & Horton arm—musket—presented by Mr. Mix. Average, twelve per minute. Face of operator stained by escape of gas, &c., from the chamber.

Maynard arm—carbine, with proposed improved cartridges, primed with a pellet of fulminate contained between bottom of case and copper cover; thirty-five grains of lead, forty grains of powder; average, nine per minute. Nine failures of pellets; eight fired by one change of pellet and cover; one required two changes of pellet. During these trials, the Union breech-loader, being in the hands of a citizen, was accidentally discharged by Mr. Jackson, who pulled the trigger, not observing that it was cocked.

*Strength of construction.*

Morganstern & Wiltach. First round, sixty-five grains rifle-powder, with two balls. Breech-piece could not be opened the usual way, but required to be pried open with a screw-driver.

Second round, seventy grains rifle-powder, with three balls; same difficulty experienced in opening breech-piece.

Third round, seventy-five grains rifle-powder, with four balls; same difficulty again experienced. Three service-charges afterwards fired, on which the arm worked somewhat slowly.

Alexander patent. First round, sixty-five grains powder, with two balls; arm worked hard in opening.

Second round, seventy grains powder, with three balls; lever attachment broke in opening.

Third round, seventy-five grains powder, with four balls; breech-piece was broken—arm disabled.

Whereupon the board adjourned to meet again to-morrow, 22d instant, at 11 o'clock a. m.

## FORTY-SEVENTH DAY.

WASHINGTON, D. C., May 22, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members of the board and the recorder.

The board proceeded to the arsenal and continued the trial of arms as follows:

*Preliminary test of one hundred rounds.*

Richardson arm—plan for modification of Springfield musket—presented by Mr. Cheney. Average, twelve shots per minute.

Burton arm—new arm—carbine. Average, eighteen shots per minute.

Gray arm, No. 2—plan for modification of Springfield musket—presented by Mr. Gray. Average, twelve shots per minute.

Remington arm—plan for modification of Springfield musket—presented by Mr. Rider. Average, thirteen shots per minute.

Union breech-loader—repeating carbine—presented by Mr. Dodge. Average, with magazine: the magazine containing twenty charges was discharged in two minutes and five seconds, the operator being wholly inexperienced; without magazine, ten per minute.



*Strength of construction.*

Laidley arm—musket. First round, sixty-five grains rifle-powder, with two balls. Head of shell blown off, wedging the breech-piece so that it could not be moved by pressure of the thumb.

Second round, seventy grains of powder, with three balls. Head of shell again blown off, but breech-piece worked easily.

Third round, seventy-five grains of powder, with four balls. Head of shell again blown off and breech-piece wedged so that it could not be moved by pressure of thumb. In each round the shell was extracted by a hook. After which three service charges were fired, in which the arm worked well.

Triplett & Scott arm—carbine. First round, sixty-five grains rifle-powder, with two balls. Head of the extractor impressed itself upon the shell, wedging the breech-piece so that it could not be opened by pressure of the thumb.

Second round, seventy grains of rifle-powder, with three balls. The breech was so far opened by the binding of the spindle that the arm was disabled.

Richardson arm—modification of Springfield musket. First round, sixty-five grains rifle-powder, with two balls.

Second round, seventy grains rifle-powder, with three balls.

Third round, seventy-five grains rifle-powder, with four balls. No difficulty experienced with the arm during the trial or in firing the three service charges afterward.

Gray arm, No. 2—modification of Springfield musket. First round, sixty-five grains rifle-powder, with two balls.

Second round, seventy grains rifle-powder, with three balls.

Third round, seventy-five grains rifle-powder, with four balls. Handle of lever slightly sprung up on this round, but no injury of breech-piece was effected. Three service charges fired and arm worked well.

Henry arm—repeating carbine, No. 1. First round, sixty-five grains rifle-powder, with three balls, light, (weighing three hundred grains each.) Head of case bursted and the gas escaped so as to foul the machinery and prevent it from working. The board authorized it to be repaired and returned.

Remington arm—plan for modification of Springfield musket. First round, sixty-five grains rifle-powder, with two balls.

Second round, seventy grains rifle-powder, with three balls.

Third round, seventy-five grains rifle-powder, with four balls. Arm worked extremely well throughout the trial, and in firing three service charges afterward.

Cochran arm—musket. First round, sixty-five grains rifle-powder, with two balls. Head of shell blown off, wedging the breech-piece so that it could not be opened but by a blow. Shell could not be withdrawn by extractor.

Second round, seventy grains rifle-powder, with three balls. Head of shell again blown off, wedging the breech-piece.

Third round, seventy-five grains powder, with four balls. Breech-piece blown open and arm disabled.

Union breech-loader—repeating carbine. First round, sixty-five grains rifle-powder, with two balls, (four hundred grains each.) Metal of barrel forced into cut for the extractors on the sides of the barrel so as to prevent the working of the breech-piece. Arm disabled and withdrawn to adjust the extractors.

After which the committee of the board submitted the following report of experiments on Saturday, 19th instant:

Fired Berdan's altered Springfield rifle musket, calibre fifty-eight, one thousand yards range, sixteen shots. Five shot struck target, gun shooting wild. No copy of record taken.

Henry repeating rifle, calibre fifty, one thousand yards range. Fired about fifteen shots to get range; then fifteen shots fired. Six shots struck target, gun shooting wild. No copy of record taken. One shot in penetration butt three boards.

Fired Remington rifle musket, calibre forty-five, old model, one thousand yards, **en** shots to get range; then six shots fired. Two shots struck target. At sixth **hot** breech-cap blew open and broken. Gun rendered unserviceable. One **hot** in penetration butt five boards.

Henry repeating rifle, calibre forty-four, one thousand yards. Fired twenty-**three** shots to get range, gun shooting very wild. No record taken with this **gun**.

Remington carbine, calibre fifty, new model, one thousand yards. Twenty-**five** shots fired to get range. Gun shooting wild. One shot struck penetration **butt** three boards. No record taken.

And the board adjourned to meet again to-morrow, twenty-third instant, at **eleven** o'clock a. m.

#### FORTY-EIGHTH DAY.

WASHINGTON, D. C., *May 23, 1866.*

The board met at eleven o'clock a. m., pursuant to adjournment. Present, all **the** members and the recorder.

The board proceeded to the arsenal, and upon motion adopted the following **resolution** :

That the board do now proceed to select the arms that may be deemed worthy **of** recommendation, and that further experiments in competition be confined to **those** arms.

And the following arms were selected in accordance with this resolution :

Modification of Springfield musket, Berdan, Remington, Richardson, Allen.

New arms—single-loading muskets: Peabody, Laidley, Remington, Sharp, **National**, Hammond.

New arms—single-loading carbines: Laidley, Remington, Peabody, Sharp, **Wright**, National, Hammond.

Repeating arms: Spencer, Henry.

After which the following resolutions were adopted:

That, after this day, all trials of arms by the board be private.

That the further trials of firing for range and accuracy be suspended, except **in** connection with experiments in regard to calibre.

The trial of arms was then continued as follows :

Wright arm—carbine. First round, sixty-five grains rifle-powder, with two **balls**; shell not thrown out by extractor.

Second round, seventy grains rifle-powder, three balls; shell not thrown out **by** extractor.

Third round, seventy-five grains rifle-powder, four balls; shell opened where **it** was struck by the firing-pin and opposite hole in the bottom of the barrel, made for the extractor spring; gas escaped through the hole, breaking the **spring** and the stock.

Henry arm—repeating carbine, No. 1. First round, sixty-five grains rifle-**powder**, with three (light, three hundred grains each) balls.

Second round, seventy grains rifle-powder, with four (light, three hundred **grains** each) balls; breech-pin could not be moved except by blows.

Third round, seventy-five grains powder, with five balls; one cartridge in **the** magazine was bursted on this round; escape of gas clogged the machinery and sprung open the side plates. The board authorized the taking apart, and **cleaning** of the arm.

*Penetration*—(Same target as on 2d instant.)

Henry arm—carbine, No. 1 :

30 grains powder, 304 grains lead.	{	1st round, through 7th board.
		2d round, through 7th board.
		3d round, through 6th board.

The board then adjourned to meet to-morrow, 24th instant, at 11 o'clock a. m.

## FORTY-NINTH DAY.

WASHINGTON, D. C., May 24, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal, and continued the trial of arms as follows:

*Penetration*—(Target same as used on 2d instant.)

National arm—musket:

65 grains powder, 400 grains lead.	{	1st round, through 9th board and in 10th.
		2d round, through 13th board and in 14th.
		3d round, through 13th.

Richardson—plan for modification of Springfield musket:

1st round, through 11th board.

2d round, through 10th board.

3d round, through 11th and in 12th.

After which, the board adjourned to meet again to-morrow, 25th instant, at 11 o'clock a. m.

## FIFTIETH DAY.

WASHINGTON, D. C., May 25, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members except Colonel Owens, and present the recorder. A note was presented from Colonel Owens stating that he was detained at home by sickness.

The board proceeded to the arsenal and continued the trial of arms as follows:

*Test for penetration*—(Same target as on 2d instant.)

Remington arm—plan for modification of Springfield musket:

65 grains powder, 500 grains lead.	{	1st round, through 10th board and in 11th.
		2d round, through 10th board and in 11th.
		3d round, through 10th board and in 11th.

*Facility of manipulation*—(With the same detail as employed on the 2d instant.)

Henry arm—repeating carbine, No. 1. Arm withdrawn from the test. The magazine operates, but the arm cannot be used as a single-loader. The main-spring is weak, and the connection between the arm and the platform that raises the cartridge is imperfect.

Laidley arm; Spencer arm, rifle; Remington arm, navy carbine; Spencer arm, carbine; Richardson arm; Remington arm, plan for modification of Springfield musket.

The following named arms were then covered with fine dust: Laidley, Henry, Richardson, Hammond, Spencer, Peabody, Allin; Remington, (carbine;) Sharp, National; Remington, (modification Springfield musket;) after which they were all, except the National arm, found to work freely. The National arm was disabled by the test, until the dust was removed, when it again worked well.

the above-named arms were then sprinkled with water, to be put away and allowed to rust until Monday, 28th instant; after which the board adjourned to meet again on Monday, 28th instant, at 11 o'clock a. m.

## FIFTY-FIRST DAY.

WASHINGTON, D. C., *May* 28, 1866.

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal and continued the trial of arms as follows: Three charges were fired from the Poultney musket, in which the arm worked well. The arms sprinkled and laid away on the 25th instant were then examined as follows:

Laidley rifle: dust in the recess for the rim of the cartridge prevented the cartridge from fully entering the chamber and the breech from closing. The recess being cleaned out, the arm was fired without difficulty.

Remington navy carbine—was loaded and fired without difficulty.

Remington modification of Springfield musket—was loaded without difficulty, but missed fire several times.

Peabody musket—was loaded and fired easily. The extractor did not throw out cartridge at first; but, after a few fires, worked well.

National arm—musket—was loaded with considerable difficulty, but fired easily.

Sharp musket. The extractor worked stiffly at first, but afterwards easily; arm otherwise unimpaired.

Spencer musket—was loaded and fired without difficulty from magazine, but the breech-piece opened hard in consequence of the expansion of the metal in the cut of the barrel pressing upon the extractor.

Allin—loaded and fired without difficulty.

Richardson—loaded and fired well, but the spring did not return the extractor freely at first; worked well after a few fires.

Hammond musket—could not be opened by hand on account of the rust. After being oiled it worked freely.

Henry—worked imperfectly.

After which, the board adjourned to meet again to-morrow, 29th instant, at 12 o'clock m.

## FIFTY-SECOND DAY.

WASHINGTON, D. C., *May* 29, 1866.

The board met at 12 o'clock m., pursuant to adjournment. Present, all the members and the recorder.

The board proceeded to the arsenal, and after discussion the following resolution was adopted:

*Resolved*, That each member of the board select such arms, not exceeding five of each kind in number, as he deems proper, for the consideration of the board, before making up its final opinion.

Under which resolution the following named arms were selected:

*Modifications of Springfield muskets*.—Berdan; Remington.

*New muskets, single-loading*.—Peabody; Remington; Laidley; Sharp.

*Carbines, single-loading*.—Remington; Laidley; Peabody.

*Magazine arm*.—Spencer.

After which, the board authorized Colonel Benton to continue experiments with reference to calibre.

Whereupon the board adjourned to meet again on Friday, June 1, to enable the recorder to prepare papers for the report of the board.

## FIFTY-THIRD DAY.

WASHINGTON, D. C., *June 1, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment; but on account of the day being set apart for the obsequies of Lieutenant General Scott, adjourned to meet again to-morrow, the 2d instant, at 11 o'clock a. m.

## FIFTY-FOURTH DAY.

WASHINGTON, D. C., *June 2, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members of the board except Colonel Porter; and present the recorder.

Colonel Benton presented the following report of the experiments made by himself under authority of the board:

Berdan arm, No. 4—plan for modification of Springfield musket. Preliminary test of one hundred rounds; average, nineteen shots per minute.

*Penetration.*

Target, one-inch white pine boards placed close together; distance thirty yards.

Berdan No. 4; bullet hardened with antimony:

72 grains *fff* powder; { 1st round, through 18th board and in 19th board.  
512 grains lead. { 2d round, in 17th board.

*Strength of construction.*

Berdan arm, No. 4—plan for modification of Springfield musket:

First round, sixty-five grains rifle-powder, with two balls, (five hundred grains each.)

Second round, seventy grains rifle-powder, with three balls, (five hundred grains each.) Breech difficult to open; was opened by blows.

Third round, seventy-five grains rifle-powder, with four balls. Breech again difficult to open; was opened by blows. In firing the three service charges afterwards the ejector worked stiffly at first, but subsequently worked freely.

Roberts's, No. 5—plan for modification of Springfield musket:

First round, sixty-five grains rifle-powder, with two balls. Arm could not be opened on account of wedging of the extractor, due to the pressure of the shell upon the extractor; arm disabled.

The recorder was directed to open the proposals by inventors and file them for transmission, with the report of the board.

After which, the board adjourned to meet again on Monday, 4th instant, at 11 o'clock a. m.

## FIFTY-FIFTH DAY.

WASHINGTON, D. C., *June 4, 1866.*

The board met at 11 o'clock a. m., pursuant to adjournment. Present, all the members and the recorder.

After full discussion the following was adopted as the

*Report of the board.*

The board begs leave to submit the following report:

The experiments of the board lead it clearly to the following conclusions:

1st. That the .45-inch calibre ball has given the best result as to accuracy, penetration and range.

2d. That all rifle muskets and single-loading carbines used in the military service should, if practicable, be fitted for the same cartridge.

4th. That the charge for muskets should be from 65 to 70 grains of powder, and from 480 to 500 grains of lead.

5th. That the board recommends the plan of alteration submitted by H. M. Dan. This gives the stable breech-pin, secures the piece against premature discharge, and involves only a slight change of our present pattern of arms. The bore of our present barrel (as has been proved by experiments before the board) can be reduced to the desired calibre by reaming out the grooves and inserting a tube.

6th. The board has carefully examined the various patterns of new breech-loading arms presented to it, but finds itself unable to recommend any one of them for adoption for future construction by the government. While fully impressed with the great mechanical ingenuity displayed in many of the plans, none offers advantages for service superior to the altered musket recommended; and therefore the board considers that, in view of the large number of excellent muzzle-loading muskets now in store, and the slight changes of machinery necessary to make new arms on that plan, should more arms be deemed necessary, there can be no justification for an entire change of model, and the great expense consequent thereon, until some further improvement shall be devised producing more decided advantages than any of the arms yet presented.

7th. The board is not decided in the opinion whether it would be best to have only magazine carbines in the cavalry service. From past experience the board would be unwilling to dispense entirely with magazine arms, and as these arms can be used ordinarily as single-loaders, (retaining a number of charges in the magazine for extraordinary occasions, free from danger of ignition in the ordinary use of the gun,) the only objections to their exclusive use are the additional expense of this arm over the simple single loader, and the greater inconvenience of the use of a lever-gun compared with some patterns of the hinge breech-gun which have been presented to the board.

In consideration of the above, and also of the manifest advantages of having single-loading carbines (if needed) and muskets made upon the same pattern, except in length of barrel, the board recommends that until a suitable plan for new muskets can be obtained, offering decided advantages over the proposed plan now recommended for altered muskets, no single-loading carbine should be constructed for the army.

The experience of the late war, as well as all experiments by this board, prove that the Spencer magazine carbine is the best service gun of this kind yet offered. Our experiments detected a defect in the arrangement for the extractor, which has been corrected by the manufacturers, upon the suggestion of the board, producing, in the opinion of the manufacturers themselves, a decided improvement in the arm, and one that will lessen much the liability to become disabled in the service. It is believed, however, from models and from experiments of the board, that the magazine arm is capable of further improvement; and the board would therefore recommend some delay in adopting definitely a pattern "for future construction of carbines for cavalry service." Should new carbines be previously needed, it is recommended that the Spencer carbine, with the modified extractor, be used.

8th. The board is of opinion that for facility of handling, lightness, and accuracy of fire, it will be of advantage to reduce the length of barrel, when practicable, to not less than thirty-three inches, retaining the present length of bayonet; and also that with the adoption of the metallic cartridge, the present cartridge-box should be modified.

WINFIELD S. HANCOCK,

*Major General U. S. Vols., President of the Board.*

C. C. PARSONS,

*Bvt. Lieut. Col. U. S. A., Recorder of the Board.*



Whereupon the board, having completed its labors, in accordance with Special Order No. 204, dated War Department, May 2, 1866, adjourned.

WINFIELD S. HANCOCK,

*Major General U. S. Vols., President of the Board.*

C. C. PARSONS,

*Bvt. Lieut. Col. U. S. A., Recorder of the Board.*

*Indorsement of the Chief of Ordnance on the report of the board.*

ORDNANCE OFFICE, June 16, 1866.

Respectfully submitted to the Secretary of War through the Lieutenant General commanding the army.

The board is correct in its conclusions that, of all the calibres tested by it, that of .45" will give the best results in accuracy, range, and penetration, with the same weight of powder and lead, but the superiority of this calibre over the .50" calibre is not, in my opinion, sufficient to counterbalance the objections to so small a calibre arising from the great length of the cartridge.

In the hands of troops on the battle-field, and in firing off-hand, and from an ordinary rest, the difference in accuracy or range between these two calibres would be scarcely appreciable.

The length of the cartridge containing 70 grains of powder and 500 grains of lead, for the .50" calibre, is not too great, while that for the .45" calibre is entirely too long for general service.

The large number of carbines of .50" calibre, of the most approved models, in the department and in the hands of the cavalry, furnishes a strong reason why this calibre should be adopted for both cavalry and infantry troops, unless it can be shown that a smaller calibre possesses very decided superiority over it.

For these reasons, and with the information now possessed by this department, I am of opinion that the calibre, which should be the same for muskets and carbines, should not be reduced below .50".

A proper plan for the alteration of the Springfield rifle musket, of which there are about one million in the arsenals, is so great a desideratum that no one plan should be adopted until after it shall have been fully tested in the hands of troops.

Several methods, appearing to possess great merit, have been brought to the notice of this department and of the board, of which the following are, in my opinion, worthy of being tested by troops, viz :

1. Berdan's, recommended by the board ;
2. Major Yates's, presented after the adjournment of the board ;
3. Remington's ;
4. Roberts's ;
5. Allin's, made at Springfield armory. (A battalion of the 12th infantry has been armed with this musket for several months, and the report of the commanding officer upon them is highly favorable.)

I recommend that as many as fifty of each of these arms of .50" calibre be prepared at Springfield armory, at the expense of the United States, and so issued to troops that an equal number of each kind will be in the same company.

That the cost of altering these muskets according to each plan be ascertained.

That the arms be thoroughly tested by the troops, under such instructions as will be given by this bureau; and that no plan for alteration be adopted until this test shall have been made.

In order that the altered muskets may be properly compared with the best original breech-loaders, I recommend that fifty of each of the following arms be

le at Springfield armory, or procured by purchase, and issued in the same portions as the altered muskets, and to the same companies, viz :

1. Remington's; 2. Laidley's; 3. Peabody's; 4. Sharp's.

I further recommend that ten of the Fogarty repeating carbines, which are highly praised by the board, be made at Springfield armory, to be tested in comparison with the Spencer carbine.

A. B. DYER,  
*Bvt. Maj. Gen., Chief of Ordnance.*

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*Indorsement of Lieutenant General Grant on the report of the board.*

HEADQUARTERS ARMY OF THE UNITED STATES,  
June 26, 1866.

Respectfully forwarded. The recommendations contained in the indorsement of the Chief of Ordnance are approved, except the proposition to place new tent arms in the hands of troops for trial.

There being such a large number of arms on hand capable of economical alteration, it seems unnecessary at present to experiment with new arms, many improvements in which will no doubt be made by the time they will be actually required.

The superiority of the .45 calibre in accuracy, range, and penetration, seems to have been placed beyond a doubt, but a uniformity of calibre being so desirable, and there being such a large number of arms of calibre .50 on hand, it may be advisable to adopt this calibre.

U. S. GRANT,  
*Lieutenant General.*

Approved:

E. M. STANTON,  
*Secretary of War.*

REPORT  
OF  
THE SIGNAL OFFICER.

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OFFICE OF THE SIGNAL OFFICER,  
*Washington, D. C., October 20, 1866.*

SIR: In compliance with the circular issued from the Adjutant General's office, of date October 5, 1866, I have the honor to submit the following report of the operations and expenditures of the signal service for the year ending October 20, 1866.

At the date of my last annual report (October 20, 1865) there remained in service of the signal corps United States army, exclusive of this office, two detachments; one consisting of nine commissioned officers, two non-commissioned officers, and thirty-five enlisted men, serving in the military division of the Mississippi, and operating with the troops upon the plains; the other consisting of fifteen commissioned officers, thirteen non-commissioned officers, and eighty-six enlisted men, serving in the military division of the Gulf, and operating with the troops in Louisiana, central Texas, and along the southwestern boundary.

Upon November 9, 1865, Special Orders No. 593, War Department, Adjutant General's office, were issued, directing the muster out of all officers and enlisted men of the signal corps then on duty within the department of Major General G. M. Dodge, commanding in Kansas and the Territories.

By Special Orders No. 90, dated Headquarters Department of Texas, Galveston, Texas, April 30, 1866, all the enlisted men of the signal corps serving in said department were discharged; and by Special Orders No. 91, paragraph 4, (afterwards confirmed by the War Department,) dated Headquarters Department of Texas, Galveston, Texas, May 1, 1866, all the commissioned officers of the signal corps serving in said department were mustered out. There then remained, exclusive of this office, but three officers in the military division of the Mississippi, and two in the military division of the Gulf, and these were mustered out in pursuance of Special Orders No. 262, War Department, Adjutant General's office, dated June 4, 1866.

As these various detachments of the corps and those which had been mustered out at a prior date were discharged, the records of them, severally, were forwarded to this office, where, during the last year, they have been assorted, filed, or otherwise arranged for preservation and future reference. This, with the ordinary duties of the office, has, and will for some time to come keep employed the limited clerical force allotted this department, as it is proposed to put in durable shape the thousands of messages and reports which passed through or emanated from the corps, and now only exist in loose scraps of paper. These, it is presumed, will yet play an important part in securing for a comprehensive history of the late war much that will throw light upon the details of the same.

EXPENDITURES, ETC.

Early in March of the present year, the collection at this office of all the unserviceable and surplus signal supplies from the several armies and military departments having been concluded, they were disposed of at public auction, in the spirit of General Orders No. 77, War Department, Adjutant General's office,

ies of 1865, (for reducing the expenses of the military establishment,) might complied with by this branch of the service.

ere were expended during the year ending September 30, 1866, of the sums previously appropriated by Congress for the sig- nal service.....	\$3, 900 15
ere were realized from the sale of surplus and unserviceable signal supplies, during the same period.....	2, 455 18
aking an excess of expenses above receipts of.....	<u>1, 444 97</u>

he books of the treasury show a balance of appropriations re- maining untouched and still subject to requisition on Septem- ber 30, 1866, of.....	\$245, 856 49
alance remaining on deposit to the credit of the disbursing offi- cer of the signal department on September 30, 1866.....	<u>6, 709 48</u>
otal amount available for signal service on September 30, 1866..	<u><u>252, 565 97</u></u>

No appropriation for signal service was requested of last Congress, nor will any be required of this.

Signal operations in the field during the past year, though there was little demand for the same, were prevented by a combination of circumstances growing out of the reorganization of the army. However, it was proposed and recommended by this office that certain signal surveys be made of the vicinity of all permanent fortifications and the same mapped for future use, but the authorities not having as yet acted upon said recommendations, we have not been able to enter upon this—a series of operations, to the great prospective value of which I am convinced both prudence and reason will bear ample testimony.

Though I have little hope that the tenure of my office will be sufficiently prolonged to enable me to carry into execution the suggestions above referred to, and made in my communication to the Adjutant General of date of May 5, 1866, still I deem it eminently proper, on account of the undoubted advantage that must result from their being carried into effect, to embody the same in this report in order to place them upon record, and thus secure their possible adoption by my successor, whoever he may be. To this end I incorporate the following extract from said communication, to wit:

“It has been conclusively demonstrated that great advantage and security are afforded a military post in possessing means of communication with a friendly force over the heads of a besieging enemy; and inasmuch as many permanent military posts will be established in various parts of the country which will be liable, in the event of future wars, to be besieged and captured, I would recommend it as eminently prudent and important that charts, showing signal lines of communication radiating in all directions from the several forts, be prepared; one copy of which to be given to the commandant of each fort, and duplicates to be filed in this office. Should it then at any time become necessary, one or the other of these lines can be, with little delay, occupied by signalists and communication opened.

“Were it necessary in order to bring the advantage of this more forcibly to view, I might instance Allatoona, which was saved by such communication, and Harper’s Ferry, which was lost from the want of it.”

I would also take this opportunity to recommend to the authorities the adoption into our national military and naval schools, as a special branch of study, the principles of signals. I do not mean by this simply the acquirement of any special alphabetical code now in use or which may be hereafter adopted. Time so devoted would be misspent. Such knowledge would be forgotten long before

any opportunity might be had to put it to practical use. Furthermore my experience has clearly demonstrated to my judgment that the introduction in the service, as was recommended some years since, of what was termed a general service code, to be used in its simple form, would be anything but a benefit, as no simple code can be contrived which an expert cannot read after a few trials. The mere waving of a flag or torch is certainly to the inexperienced very mysterious, and would at first seem unintelligible to all save those in possession of the particular code in use. It was thus accepted at the commencement of the late war by those most acquainted with our signal service. But when opportunity was given to those in the field to see the signals of the enemy, it was made apparent that secrecy was impossible with the simple code. The attention of the signal officer of the army having been called to this, ciphers were introduced, and the officers instructed thenceforth to send no important messages save in cipher. The signal cipher is therefore one of the principal components of safe signalizing, and that alone which gives any peculiar value to the system as now in use in the army.

The importance connected with all military communication is sufficient to cause it to be regarded in the light of a science. This science is, perhaps, in no manner so well developed or made susceptible of being systematically acquired as in the study of the principles of signals, as now used in our army. Therefore, let all officers of the army and navy be thoroughly instructed in the principles underlying this system of signalizing, and they will never be at a loss for means of communication under almost all circumstances, in some mode to be understood alone by those for whom the communication may be intended, and this, too, when all ordinary means of communication are impossible.

The old system of signalizing in use in the navy is very good as far as it goes, but it is too arbitrary and unwieldy. The mobility given to signalizing by the investigations and experiments of A. J. Myer, late signal officer of the army, in connection with the improvements added by the combined experience of the corps during the late war, is a great advance upon all former systems, and now offers to the government a complete science of the art of secret communication, whether in the manner of day or night visual telegraphing in ordinary secret official transactions, or in communicating from the enemy's camp or citadel.

I have the honor to be, sir, very respectfully, your obedient servant,  
B. F. FISHER,

*Chief Signal Officer, and Colonel U. S. A.*

Hon. E. M. STANTON,

*Secretary of War, Washington, D. C.*

**REPORT**  
**OF THE**  
**COMMISSIONER OF THE BUREAU OF REFUGEES,**  
**FREEDMEN AND ABANDONED LANDS.**

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**WAR DEPARTMENT, BUREAU OF REFUGEES,**  
**FREEDMEN AND ABANDONED LANDS,**  
*Washington, November 1, 1866.*

**SIR:** I have the honor to submit, for the consideration of his excellency the President of the United States, the following report, called for by an act of Congress, approved March 3, 1865.

No material change has been made in the general organization of this bureau since the date of my last annual report. Specific changes will be treated of in connection with the subject of courts, and of the several States.

The jurisdiction of each assistant commissioner has usually corresponded in its limits with the military district or department, embracing, commonly, a single State. States have been subdivided into districts and sub-districts of convenient size, superintended by bureau officers whose duty it is to inform themselves of all matters relating to the interests of refugees and freedmen, and to adopt such measures for their protection or relief as occasion should require, and existing laws and orders authorize.

Whenever practicable, military commanders of States have been appointed assistant commissioners. The active co-operation of military officers has thereby been very generally secured, and the efficiency of this bureau generally promoted.

The prompt intervention of armed force in cases requiring it, and the personal sympathy of commanders, which has seldom been withholden, with the work of the bureau, is necessary to enforce obedience to existing regulations, and to protect more effectually the interests of the laboring classes.

By the union of these offices I am enabled, in numerous instances, to dispense with the services of officers employed in districts and sub-districts where military commanders have been assigned to the charge of bureau affairs, and thus to relieve the government of expense.

Of the four departments of the bureau, embracing that of lands, the record division, financial affairs, and the medical department, each preserves, as heretofore, its distinctive organization. To the charge of each an officer is assigned, with such clerks as he may actually require, appointed in conformity with existing laws and regulations.

Another subdivision has recently been organized—the claim division—which is also distinctive in character, but under the immediate charge of the officer who superintends the land department. The importance of this division in the settlement of claims of discharged colored soldiers will be readily appreciated. Its operations are particularly explained under the appropriate heading.

The law continuing the existence of the bureau, passed July 16, 1866, has had a salutary effect. Aside from its important relation to the business interests of the bureau, it has served to cheer the freed people throughout the entire south, to increase their confidence in the general government, to give new stimulus and a better tone to industrial and agricultural enterprises, and often to secure



justice to the freedmen where a law less comprehensive or explicit would have been insufficient for that purpose.

In accordance with the provisions of law the jurisdiction of the bureau embraces Maryland and Kentucky. To the latter State an assistant commissioner has been assigned, and subsequently an officer also appointed to the superintendence of Maryland.

The freed people of these States have become an important charge. Willing and anxious to labor, they sometimes required the protection of a powerful agency to shield them from the imposition of employers, the cruelty of enemies, and unfairness of the courts. The specific statements of this report under the heading of these States respectively refer particularly to their condition, and show the advantages which have accrued to the laboring population through the immediate operations of the bureau.

Yet the new law has not yet had a fair test, as the regulations based upon it proposed by a board of officers, revised by myself, and submitted to the War Department in September last, have not yet received the sanction of the President. It became necessary, however, to give specific directions, in accordance with the law, to prevent confusion and to secure a measure of uniformity of action on the part of agents, and particularly to regulate all matters connected with financial affairs.

As soon as the general regulations can be published and enforced, it is hoped that the want of system, complained of by inspectors in certain States, will be completely obviated.

Branch employment-offices have been established in various cities in the northern States, by means of which homes have been obtained for large numbers of dependent freed people, who were congregated at camps and in southern cities. By this arrangement the bureau is enabled to accommodate numerous applicants, to relieve the government of a large expense, and crowded localities of their surplus population. These offices are in no respect a source of revenue, yet they are so conducted that their cost to the government is trifling.

The matter of wages to laborers under contract has never been regulated by specific orders from the commissioner. Wages have varied in different States according to the circumstances which usually affect the price of labor. I have not ceased, however, by personal effort and through my officers, to urge upon the freed people the importance of obtaining employment, an appeal which they have very generally responded to when the opportunity presented itself.

Owing to the presence of a surplus population, their efforts, in certain places, to obtain employment have been unavailing.

Prior to the planting season, in a few counties combinations were formed to keep down the price of labor, five dollars per month, in some instances, for able-bodied men, being the highest wages fixed upon. Bureau officers insisted upon a much higher standard; freed people were dissatisfied with the terms offered, and the cry was raised immediately, in numerous localities, that the freedmen were unwilling to labor, were idle, and worthless. It becoming suddenly apparent that laborers would soon be scarce, an adjustment of these difficulties was quite generally effected, and labor for the year organized.

The fact cannot be concealed, however, that the disposition manifested by so many employers, thus early in the season, to reduce wages by community of action, tended seriously to lessen the confidence of the freed people in them, and increased suspicion and prejudice.

Successful efforts have been made to elevate wages. To secure this end the vigilance and activity of bureau agents were indispensable. Our officers devoted themselves to the work with commendable energy, and by a firm and wise policy have been largely instrumental in initiating a proper system of labor.

Until the system of free labor shall be practically understood in the south and be protected by just laws impartially executed, and sustained by the senti-

ment of the community interested, some agency like this bureau seems vital to the success of all those agricultural enterprises which depend upon the labor of the freed people.

The evils incident to such an agency are apparent whenever an agent is corrupt or incompetent. This defect must necessarily appertain to any organization whatever.

#### LAND DIVISION.

Major William Fowler, assistant adjutant general, has had the immediate direction of this department of my work. His records are very complete and clear, containing information that he has been able to derive from reports and from personal inspection in the different insurrectionary States. His general statements are as follows:

The annexed schedule shows the amount of property now in possession, and the amount restored during the present year.

Orders received during the year 1865 necessitated the restoration to original owners who had received pardon of all abandoned property to which they could prove their title. Under these instructions it was evidently improper to allot property of this character to freedmen for homesteads, in accordance with the provisions of the act establishing the bureau.

No guarantee of possession for even a limited period could be given them. Such action as had been taken prior to orders affixing conditions of restoration was countermanded, and all that had been performed was abandoned. As far as possible property was leased and a considerable revenue obtained for a time. This was quickly diminished by the rapid restoration of the property to its former owners. The portion already restored is that from which the largest revenue resulted.

The conditions upon which property is returned are proof of pardon, either by special warrant, or taking the oath of amnesty, and proof of title.

In some cases colonies of destitute freedmen were located upon abandoned lands. Over such land the bureau retained control, as a matter of necessity and humanity, until the freedmen could be removed without suffering. Freedmen were cultivating other portions of abandoned land, and such land was retained by the bureau until the crops were secured, or full compensation made for the labor, products, and expenditures of those working upon it.

A few pieces of town property, used as offices and quarters, were also kept until other accommodations could be procured. With these exceptions all abandoned property has been restored immediately upon the production of a pardon and proof of title by the original owner.

When property which has been leased by bureau officers or other agents of the government is restored, it is always stipulated that the conditions of the lease shall be respected by the owner of the property. The rents for the period subsequent to date of pardon, with the exception of those which have been collected and accounted for, are allowed to the person to whom the property is restored.

The restoration to original owners of the property abandoned by them for the purpose of aiding the rebellion produced great disappointment among the freedmen, whose expectations had been raised by the provisions of the act establishing the bureau, and at one time serious difficulty was apprehended, but, by constant exertions on the part of officers of the bureau and other officers to disabuse their minds, it was avoided.

The early abandonment of all proceedings for the confiscation of property prevented the bureau from obtaining much land to which it might otherwise have gained a title, and upon which it would doubtless have located freedmen, with a guarantee of continued possession.

A few pieces of property formerly belonging to the so-called confederate States have been transferred to this bureau. They are, however, neither sufficient in extent, nor adapted in character to allotment as homesteads.

Schedule of property in possession and property restored since last yearly report

State.	Number of acres in possession.	Number of pieces of town property in possession.	Number of acres re-stored.	Number of pieces of town property re-stored.
Virginia .....	11, 162	102	56, 775	13
North Carolina.....	3, 696	14	29, 236	12
South Carolina.....	96, 693	20	15, 278	63
Georgia .....	39, 867	58	.....	.....
Tennessee* .....	32, 604	234	17, 928	23
Kentucky†.....	.....	.....	.....	.....
Alabama.....	.....	7	1, 340	1
Mississippi .....	15, 972	23	10, 025	25
Louisiana.....	10, 600	332	85, 800	1, 211
Arkansas .....	41, 587	37	66, 112	91
Texas .....	.....	.....	.....	6
Florida .....	100	273	.....	26
Maryland.....	.....	1	.....	1
District of Columbia, Virginia, &c.....	19, 950	18	4, 628	4
Total.....	272, 231	1, 119	287, 122	2, 665

The number of acres in possession at last annual report was seven hundred and sixty-eight thousand five hundred and ninety, (768,590,) of which two hundred and eighty-seven thousand one hundred and twenty-two (287,122) acres have been restored, and forty-five (45) tracts besides, of which the number of acres are not reported.

The amount now in possession, it will be seen, is two hundred and seventy-two thousand two hundred and thirty-one (272,231) acres, increased by two hundred and twenty eight (228) tracts in Tennessee, of which the assistant commissioner has not reported the number of acres.

The number of pieces of town property reported last year was one thousand five hundred and ninety-six, (1,596;) number subsequently transferred to the bureau from other departments of the government, two thousand one hundred and twenty-eight, (2,128;) making total in possession, three thousand seven hundred and twenty-four (3,724) pieces; full amount restored, two thousand six hundred and five, (2,605,) leaving in possession at this date one thousand one hundred and nineteen (1,119) pieces of town property.

The lands on the coast of South Carolina and Georgia, which would naturally be named in this connection, are treated of specifically under the remarks upon those States respectively.

CLAIM DIVISION.

Major Fowler has also in charge the collection of certain claims of deceased colored soldiers. On this point he reports as follows:

Number of claims settled, the amount of which was received and paid to claimants through this office .....	195
Number rejected by the departments .....	41

\* Two hundred and twenty-eight tracts in possession, and forty-five tracts restored—acres not reported—not included in the above.  
† No property reported.

Number rejected at this office.....	723
Total number rejected.....	764
Number in process of adjustment.....	1,532
Total number of claims received.....	2,491

Included in the 195 settled claims are a number for pensions, the amount of which cannot be estimated.

Aggregate amount collected and paid to claimants, \$10, 539 09.

Number of letters sent.....	1,293
Number of letters received.....	998
Number of endorsements.....	225

Prior to the organization of this division, constant complaints were received by the different agents and officers of the bureau from discharged colored soldiers who had been defrauded of the amounts due them from the United States by unprincipled men. Many had been induced to believe that bounties and arrears of pay were owing to them, when such was not the case. Acting upon the representations made, they placed their discharges in the hands of parties, who generally exacted an advance fee, retained the discharges until the claimant became satisfied that nothing would be obtained for him, and then refused to give up the papers to their owners until still another fee was paid. Large numbers of soldiers were idly waiting in cities for action upon such claims, and the expense of rationing and lodging them fell upon the government.

When collections were actually made, exorbitant fees were often charged, and sometimes the entire amount retained. The ignorance, in these matters, of the great mass of the colored soldiers rendered them the especial objects of extortion and fraud, and the transactions against them were so covered up as to render it almost impossible to detect and expose the guilty.

To enable the colored soldiers to avoid such frauds in future, and to assist those who were destitute in obtaining dues which otherwise might be lost to them, this division was organized.

It went into operation on the 17th of March, 1866. Officers and agents of the bureau throughout the various States were directed to receive all claims which might be presented by colored soldiers and sailors, and their families, for arrears of pay, bounty, pensions, and prize money, and forward them to the office in Washington for file and settlement. All these services are rendered without charge.

The duties required of bureau officers in connection with this division have been entirely new to them. At first, difficulty was experienced in having the necessary papers properly prepared; but this has decreased daily, and the general accuracy now displayed is satisfactory.

In addition to the actual assistance which has been rendered in the collection of claims, the division has been of value in giving officers of the bureau information not otherwise attainable, which enables them to detect more easily the frauds so often committed by unprincipled men who often act as claim agents, and they can give correct advice, which in numberless cases has saved the colored men from loss. The expense of maintaining this division has been comparatively small.

#### TRANSPORTATION.

Transportation has been furnished to refugees and freedmen, under the provisions of General Order No. 138, dated War Department, September 16, 1865.

This order was intended to assist refugees to return to their homes in the south, to enable freedmen to repair to localities where they could be employed, and to permit officers to travel over districts in discharge of their duties.

Colored people have thronged Washington and this District in large numbers,

having come here before the close of the war for protection, and with the aim as laborers, servants, &c. Many colored regiments were also discharged at the camps in the vicinity, thus giving the District a much larger laboring population than it required.

I have thought best to urge these people to seek homes in States where they could find remunerative labor. To enable them to do this I have issued transportation, and sought by every means in my power to aid them in moving from this crowded city. In carrying out this order I have been aided by the various benevolent societies, whose agents have labored faithfully to find homes for these people in different parts of the country, and to relieve their necessities while in *transitu* from this District. Three hundred and eighty-seven (387) refugees, men, women, and children, have been transported to different parts of the south. Six thousand three hundred and fifty-two (6,352) freedmen, men, women, and children, have been transported to homes where they could find employment in different parts of the north. Assistant commissioners reported that the former masters drove their slaves away from their old homes, as the national armies approached, into safer localities, until those districts deemed safe from the approach of the armies were crowded with a population greater than they could support.

At the close of the war former masters left the freedmen where the news of peace happened to find them. To prevent suffering, assistant commissioners of the bureau issued rations to the destitute and urged them to go to work. They sought employment, and in many cases made great exertions to support themselves in their new homes. This proved a partial failure. At the beginning of this year assistant commissioners and planters asked that the freedmen be transported back to their old homes, where they could be employed at good wages. As this change would in a great measure relieve the government of their support, it was thought best to grant transportation to those either dependent or likely to become so immediately, and by this means place them in the way of permanently caring for themselves.

The exact report of persons transported on the orders of the assistant commissioners, within their districts, has not yet been received; the number is quite large, yet limited by the requirement of approval at this office before actual transportation. As there had been some complaints made that this authority granted assistant commissioners had been abused, and as the time of year had arrived when all those who desired to labor on plantations ought to be employed, the following order was issued :

[Circular No. 2.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
Washington, April 10, 1866.

Hereafter transportation given to refugees and freedmen under General Order No. 138, War Department, Adjutant General's office, series of 1865, will not embrace able-bodied men and women except in extreme cases, and to prevent actual suffering.

This order will take effect at Washington, D. C., on the 15th instant, and in each State at the date of the receipt of the same by the assistant commissioner.

O. O. HOWARD,  
Major General, Commissioner.

Since that time transportation has been granted only to those who were liable to be thrown upon the charities of the government for support.

Teachers and agents of the bureau have been furnished transportation when travelling in the discharge of their duty, when duly accredited by the assistant commissioner of the State in which they were laboring.



The necessity of transporting refugees has nearly ceased. But few cases are now reported within the provisions of the law.

Previous to July 1, the quartermaster's department paid transportation bills of the bureau in connection with all other transportation issued by that department. Twenty-two thousand three hundred and eighty-seven dollars and one cent (\$22,387 01) has been paid by receiving and disbursing officers of this bureau, out of the refugees' and freedmen's fund during the year 1866.

Since orders have been issued by the Quartermaster General, requiring all transportation for the benefit of this bureau to be presented to the receiving and disbursing officer for payment, \$35,678 83 has been paid to October 1. Of course this is only a portion of the amount due, as many officers have not yet made their returns of transportation issued; and the orders issued from this office have not always been used.

No transportation has yet been given in the work of transferring freedmen to the public lands, except to send several agents for colonies or proposed settlers to see what could be done in Florida and other States available for this purpose under the homestead law.

I have promised the aid contemplated in the law and appropriation, and shall be able to obtain practical results as soon as the contracts for this year shall have been fulfilled. It is the industrious who are anxious to move and settle upon the public lands.

The really indigent are necessarily reluctant to try to support themselves by any such means.

*Report of transportation furnished to destitute refugees and freedmen, and of stores for destitute refugees and freedmen transported by Bureau of Refugees, Freedmen, and Abandoned Lands, from November 21, 1865, to September 30, 1866, inclusive.*

Month.	REFUGEES.				FREED PEOPLE.				Officers, agents, &c.	Grand total.	Stores forwarded to refugees and freedmen.
	Male.	Female.	Children.	Total.	Male.	Female.	Children.	Total.			
1865.											
November .....					18	58	31	107	7	114	*5
December .....	4	8	8	20	133	21	46	200	7	227	1,918
1866.											
January .....	17	9	6	32	12	14	25	51	9	92	944
February .....	8	15	35	58	68	16	59	143	7	208	372
March .....	11	10	28	49	397	65	152	614	16	679	311
April .....	10	16	23	49	935	357	260	1,602	11	1,662	169
May .....	1	3	6	10	94	29	31	154	1	165	54
June .....	3	12	13	28	336	170	75	581	2	611	10
July .....	9	15	23	47	535	341	73	999	2	1,048	†15
August .....	15	20	14	49	712	285	59	1,056	8	1,113	24
September .....	14	21	10	45	468	300	77	845	5	895	‡32
				387				6,352	75	6,814	3,854

\* 62,776 feet lumber.  
† 9 desks, 14 chairs, 25,000 feet lumber, 40 cwt. hardware, 75 desks, 150 chairs, 500 primary school chairs.  
‡ 975 school desks and chairs, 1 stove and fixtures.



## COMMISSARY SUPPLIES.

My instructions with reference to the manner of issuing rations, contained in circular No. 8, dated June 20, 1865, have not been changed.

Frequent orders have been issued to the assistant commissioners, requiring them to exercise rigid scrutiny of all returns of rations issued by their subordinates. In many cases the classes of persons receiving assistance are able to subsist upon only a part of the authorized issue. Under such circumstances only such parts of the ration as are actually needed are issued.

Relief establishments, home farms, and all organizations drawing rations for which they expected to be able to repay the government, have been discontinued. Great efforts have been made to reduce the issue of food to the actually destitute, and to prevent the benevolence of the government from being abused by unprincipled or dishonest persons.

Officers of this bureau have been instructed to hold each plantation, county, parish, or town, responsible for the care of its own poor, and whenever it was possible, aid has been demanded and secured from this quarter.

With few exceptions, the State authorities have refused to provide for old and infirm freedmen, or in fact to do anything for the relief of the class of persons supported by the government. Many of these people are blind, or deaf mutes, and should be classed with those who are supported by State institutions. The issue of rations to the paupers must necessarily be continued until such time as the States see proper to assume charge of them.

Many complaints having been made that freedmen were fed in idleness, and that they would not labor in consequence of the support furnished by the bureau, and as the time had arrived when the people of the south ought to be receiving the full benefits of the crops of this year, on my recommendation, you authorized the issue of the following order:

[Circular No. 10.]

WASHINGTON, August 22, 1866.

In accordance with the instructions of the Secretary of War, it is ordered that on and after the 1st of October next the issue of rations be discontinued except to the sick in regularly organized hospitals, and to orphan asylums for refugees and freedmen already existing, and that State officials who may be responsible for the care of the poor be carefully notified of this order, so that they may assume the charge of such indigent refugees and freedmen as are not embraced in the above exceptions.

O. O. HOWARD.

*Major General, Commissioner*

After this order had reached Virginia, South Carolina, and Alabama, the assistant commissioners of those States forwarded such petitions and statements of the condition of the people as induced me to recommend the issue, under proper restrictions, in some localities, of the most important articles of the ration.

The failure of the crops in most of the southern States is the important reason for extending to these people further aid. I have required that applications for support of the destitute come through the hands of the governor, and other State officials who may have the necessary knowledge of the subject, in order to prevent the application of supplies to "the support in idleness" of able-bodied people.

Rations are sold to teachers and agents of benevolent societies, under the same rule that applies to such purchases when made by commissioned officers of the army.

In all of the States, hospitals are maintained by the bureau, which receive the usual freedmen's ration. The orphan asylums receive support from the commissary in the same way.

The following tabular statement of the number of rations issued from June 1865, to September 1, 1866, is respectfully submitted.

The number of rations issued to the colored people has constantly decreased. They have found labor, for which they have received support and in some cases good wages. Although many complaints are made of the amount of rations issued to the freedmen, the fact of the constant decrease of their demands is very creditable.

The issue to whites increased until June 30, 1866, when the issues to freedmen and refugees were about equal throughout the south. Since June 30, the number of both classes supported by the government has decreased.

From the first day of June, 1865, until September 1, 1866, one year and three months, the average number of rations issued per month to refugees and freedmen was 894,569 ; average number per day, 29,819.

*Consolidated report of the number of rations issued to dependent refugees and freedmen, in the different States and districts respectively, from June 1, 1865, to September 1, 1866.*

Number of rations issued in each month.				Number of rations issued in each State.			
Month.	Refugees.	Freedmen.	Total.	States.	Refugees.	Freedmen.	Total.
1865.							
June .....	313, 627	36, 181	349, 808	Virginia .....	13, 990	2, 389, 553½	2, 403, 543½
July .....	85, 412	282, 968½	368, 380	North Carolina .....	6, 716	1, 419, 978½	1, 426, 694½
August .....	158, 624	743, 957	902, 581	South Carolina .....	124, 144	987, 703	1, 111, 847
September ..	370, 633	1, 080, 010	1, 450, 643	Georgia .....	172, 998½	674, 695½	847, 694
October .....	66, 785	743, 244	810, 029	Alabama .....	2, 522, 907	1, 128, 740½	3, 651, 647½
November...	54, 650½	643, 479	698, 129½	Florida.....	3, 580	22, 085	25, 665
December ...	66, 246	604, 598½	670, 844½	Mississippi .....	42, 315	360, 097	402, 412
1866.							
January.....	134, 848	585, 567½	720, 415½	Louisiana .....	157, 491½	455, 290	612, 781½
February ...	339, 957½	648, 108½	988, 006	Texas.....	349	12, 826	13, 175
March.....	382, 745½	646, 366½	1, 029, 112	Missouri and Arkansas .	1, 260, 565	444, 490	1, 705, 055 .
April .....	356, 246	552, 646½	908, 892½	Kentucky .....	196, 028	322, 074	518, 102
May.....	571, 993	573, 885	1, 145, 878	Tennessee .....			
June.....	751, 327	650, 724½	1, 402, 051½	Maryland .....	3, 289	7, 351	10, 640
July.....	503, 949½	572, 587½	1, 076, 537	District of Columbia ...	3, 519	679, 567	683, 116
August.....	350, 878½	540, 127½	891, 006	.....			
Total 15 mos.	4, 507, 922½	8, 904, 451½	13, 412, 373½	.....	4, 507, 922	8, 904, 451½	13, 412, 373½

FINANCIAL AFFAIRS.

General George W. Balloch's report is as follows for the year ending October 1, 1866 :

*Refugees' and freedmen's fund.*

The money derived from miscellaneous sources from which the current expenses of this bureau were paid previous to July 1, 1866, is now termed the refugees' and freedmen's fund, to distinguish it from the regular appropriation. The following statement shows the receipts and expenditures on account of this fund from November 1, 1865, (date of last report,) to October 1, 1866 :

Amount on hand November 1, 1865.....	\$313, 796 62
Received from various sources as follows:	
Freedmen's fund.....	367, 659 93
Clothing, fuel, and subsistence .....	2, 074 55
Farms, (sales of crops).....	109, 709 98
Rent of buildings .....	48, 560 87
Rent of lands .....	113, 641 78
Conscript funds.....	140 95
Transportation .....	1, 053 50
Schools, (taxes).....	64, 145 86
Total on hand and received.....	1, 020, 784 04

*Expenditures.*

Freedmen's fund .....	\$7, 411 2
Clothing, fuel, and subsistence .....	13, 870 3
Farms, (fencing, seeds, tools, &c.) .....	7, 210 6
Labor (by freedmen and other employes) .....	426, 918 2
Rent of buildings, (offices, &c.) .....	50, 186 6
Repairs of buildings .....	1, 957 4
Contingent expenses .....	74, 295 7
Rent of lands (restored) .....	9, 260 3
Quartermaster's department .....	11 3
Internal revenue (tax on salaries) .....	7, 965 2
Conscript fund .....	1, 664 0
Transportation .....	22, 387 6
Schools .....	115, 261 5
<b>Total expended .....</b>	<b>738, 400 52</b>
<b>Balance on hand October 1, 1866 .....</b>	<b>282, 383 52</b>

The term "freedmen's fund" embraces money received from sales of confederate property, fines, marriage-certificates, and donations.

*Destitute relief fund.*

At the last session of Congress a resolution was passed and approved by the President, April 17, 1866, appropriating twenty-five thousand dollars for the "temporary relief of the destitute citizens of the District of Columbia, the same to be expended under the direction of the Commissioner of the Freedmen's Bureau."

A portion of this fund has been expended in small sums for groceries, clothing, fuel, &c., for those (whites and blacks) actually in need.

Amount of appropriation .....	\$25, 000 00
Amount expended up to October 1, 1866 .....	6, 661 33
<b>Amount on hand October 1, 1866 .....</b>	<b>18, 338 67</b>

*Retained bounty fund.*

As stated in the last report, this bureau holds in trust, to be paid back when called for, a portion of the State bounties of certain colored soldiers enlisted in Virginia and North Carolina during the years 1864 and 1865, which was withheld from them by virtue of General Order No. 110, department of Virginia and North Carolina, series of 1864. This money is not considered public funds proper, but is held in trust by the United States for the holders of certificates of deposit.

The following is the account of this fund:

Amount on hand, last report .....	\$115, 236 49
Amount paid back during the year to October 1, 1866 .....	24, 013 20
<b>Amount on hand October 1, 1866 .....</b>	<b>91, 223 29</b>

*Appropriation fund.*

At the last session of Congress the following appropriation was made as part of the army appropriation bill:

For the support of the Bureau of Refugees, Freedmen, and Abandoned Lands for the fiscal year commencing July 1, 1866, the sum of.....	\$6, 944, 450 00
If this amount there has been drawn from the treasury by warrant to October 1, 1866.....	352, 000 00

This has been expended as follows:

Salaries of assistant and sub-assistant commissioners.....	9, 657 73
Salaries of clerks.....	27, 115 48
Stationery and printing.....	3, 736 69
Quarters and fuel.....	5, 268 67
Clothing for distribution.....	91 25
Commissary stores.....	675 99
Medical department.....	21, 298 79
Transportation of officers and agents.....	4, 889 17
Transportation of refugees and freedmen.....	782 25
Transportation of stores.....	3, 991 47
Forage.....	641 35
School superintendents.....	2, 750 87
Repairs and rents of school-houses and asylums.....	5, 647 00
Telegraphing and postage.....	1, 116 53
Internal revenue.....	527 46
Amount expended to October 1, 1866.....	88, 190 70

Balance unexpended in hands of officers October 1, 1866....	\$263, 809 30
Amount undrawn from the treasury.....	6, 592, 450 00
Total amount available to meet liabilities October 1, 1866	6, 856, 259 30

In this connection it should be stated that there is due the subsistence department for stores furnished in July, August, and September, 1866, about the sum of \$297,000.

There are also transportation bills known to be unpaid to the amount of \$26,015 94.

The amount due the medical department for stores furnished for July, August, and September, 1866, is not yet known.

#### *Recapitulation.*

Balance on hand of freedmen's fund.....	\$282, 383 52
Balance of District destitute fund.....	18, 328 67
Balance of appropriation.....	6, 856, 259 30
Total.....	7, 156, 981 49
Estimated amount due subsistence department....	\$297, 000 00
Transportation reported unpaid.....	26, 015 94
Transportation estimated due.....	20, 000 00
Estimated amount due medical department.....	100, 000 00
Estimated amount due quartermaster's department.	200, 000 00
	643, 015 94
Total balance for all purposes of expenditures.....	6, 513, 965 55

The sum of six million five hundred and thirteen thousand nine hundred and sixty-five dollars and fifty-five cents (\$6,513,965 55) is the amount available for the remaining nine months of the fiscal year. The average expenditure per month is about three hundred and fifty thousand dollars, (\$350,000) making the estimated expenditure for the fiscal year ending July, 1867, four million two hundred thousand dollars, (\$4,200,000,) which will leave for the next succeeding fiscal year a little upwards of two million three hundred and sixteen thousand dollars (\$2,314,000.) Therefore I have reduced the estimate for the next fiscal year about three million dollars.

#### SCHOOLS.

The education of freedmen and refugees under the superintendence of the Commissioner has been carried on vigorously during the year. The immediate patronage and funds for this work have been mainly from the benevolent associations of the north, while the bureau has given it protection, furnished transportation for teachers, books, and clothing, and has also supplied school-building, where it was possible, and kept them in repair. Each bureau department, embracing one State or more, has at its headquarters a superintendent of education giving his whole time to its details, and reporting monthly to the Commissioner. All officers are directed to interest themselves in these schools, and their entire organization, though complicated, is now becoming complete and efficient.

The results are full of encouragement. There were, at the close of the last school-term, in the thirteen States lately in rebellion, and including Kentucky, Maryland, and the District of Columbia, 975 regularly organized schools, 1,405 teachers, 90,778 pupils.

This does not include many schools not regularly reported, especially night-schools, and none of the large number of private and sabbath schools, now in operation. With great care in gathering information, we estimate that there are now 150,000 freedmen and their children who are earnestly occupied in the study of books. There are also a considerable number of schools for refugee white children, and the formation of these is everywhere encouraged.

The new bureau bill has given unity and system to these educational efforts and a confidence that they will be permanent. This was greatly needed by the freedmen and their friends, to secure the highest amount to be accomplished.

The well-known eagerness to learn, among the freedmen, is everywhere apparent. As proof of this, while white schools at the south have always had vacation during the three hot months, in many instances schools for freedmen have been taught without intermission through the entire summer. Kentucky reports fifteen schools in August, South Carolina sixteen in July and August, Georgia twenty-one schools through the summer. Three of these were sustained by funds of the bureau, and the remainder by the freedmen themselves—with over two thousand children in attendance. In Alabama there were twelve schools kept open; seven of these being taught by southern teachers, two by discharged soldiers, and three by colored teachers. In Louisiana there were one hundred and seven schools in August, forty-seven of these being private schools, and paid for, of course, by parents of the pupils.

From all parts we learn that the schools of the coming year will be still more crowded than in the past, and that the benevolent associations will attempt to do at least as much as heretofore, while the means of this bureau to give aid have been greatly enlarged.

From the above condensed statements it is seen that the surprising efforts of our colored population to obtain an education are not spasmodic.

If knowledge elevates, then this people are destined to rise. They have within themselves an instinct which anticipates this; a vitality and hope coupled with patience and willingness to struggle which foreshadow with certainty their higher condition as a people in the coming time.



Obstacles are yet to be encountered; perhaps the most trying period in the freedmen's full emancipation has not yet come; but we can distinctly see that the above incipient education, universally diffused as it is, has given these colored people an impulse onward, never to be lost. They are becoming conscious of what they can do—of what they ultimately can be. They begin to realize the attributes of character. Self-reliance is becoming a matter of pride with them. Even these rudiments of knowledge have helped to effect their rapid transition to habits of faithful industry, economy, thrift, self-support, and, almost invariably, good behavior.

It is worthy of note that during the last six months a change of sentiment is apparent among the better classes of the south in regard to freedmen's schools. The most intelligent concede that education must become universal. There are philanthropic and just men, who would cheerfully give this boon to all. Many planters are convinced that it will secure to them more valuable and contented laborers. Leading statesmen are urging that these people will be a safer element in their midst if made moral and intelligent; and religious conventions over all the south have passed resolutions urging upon their members the importance of giving instruction to the negroes.

It is true that many who favor such instruction do it with the proviso that northern teachers shall no longer be sent; at least, that they themselves will assume the superintendence of the schools, proposing in some instances, southern instructors, either white or colored. All this may be called a new form of opposition, and its motive does seem ambiguous. But if the State governments are ultimately to take upon themselves the education of these poor people, as they should, it is well they are making such a beginning. We are sure that the improvement of these privileges by the freedmen, their elevation of character, and good conduct as the consequence of instruction, will lead to the continuance of these privileges ultimately from the best and highest motives.

We cannot conceal the fact that multitudes, usually of the lower and baser classes, still bitterly oppose our schools. They will not consent that the negro shall be elevated. He must, as they conceive, always remain of a caste in all essential respects beneath themselves. They have been taught to believe this, and belief now is strengthened by both prejudice and passion.

While, therefore, deploring what remains of ill-will towards our schools, in some places still exhibiting violence, we have to congratulate the true friends of the country in view of the immense results obtained. They indicate the dawn of a brighter day, not only for the negro, but for all at the south. The real interests of the two races there are one. The prosperity of each is that of the other. Capital and labor will find their respective levels, worth and merit a fair field of competition, and few, if any, are so base as to deny their fellow-men, however inferior, the right and the opportunity to excel.

We hail, with exceeding pleasure, the better feeling in regard to the education of the freedmen. All advances on the subject should be cordially met. If teachers on the ground are competent and willing to heartily undertake the work we advise their employment; and if the several States will inaugurate and sustain a system of public instruction for all, though imperfect at first, we should give it warmest encouragement. Some of the States are taking steps greatly to their credit in this direction; at present, however, and probably for some time to come, we must depend on the liberality of both government and charitable societies, under the fostering care of this bureau. A more settled condition of society must be reached by the southern people before the present great work, as a whole, can be taken up, and, by their own efforts, successfully carried on, and military aid cannot safely be withdrawn until reliable guarantees of protection from the civil authorities are obtained.

Specific statements with regard to education will be found under the head of the several States.



## JUSTICE.

There has been but little uniformity of action in the different States with reference to the administration of justice. The reason for this is plain. The action taken by the legislatures of the south in granting the freedmen protection for life and property has differed according to the disposition of those bodies in recognizing the changed condition of the colored race.

Assistant commissioners have been instructed to transfer military jurisdiction as rapidly as possible, and submit all matters pertaining to the violation of law and order to the State judicial officers. This has been done completely in some States, while in others, as in Virginia, Louisiana and Texas, courts are still in existence. In some districts of Louisiana and Virginia it has been found necessary to re-establish military tribunals after their discontinuance for a short time. These changes are regulated by the necessity of protecting freedmen, which may arise at any moment.

In those States where no courts exist under the direction of the assistant commissioners, officers of the bureau are instructed to appear as the friend of the freedmen, when necessary, or to take any other action that may tend to secure the criminal a fair, unprejudiced trial.

The statistics of the several southern States in relation to freedmen show that great progress has been made by those States during the past year in the legal and moral advancement of "persons of color." The relations of husband and wife, and parent and child among persons of African descent have been judicially recognized, and many of their rights of person and property placed under the guardianship of the law.

While, however, the negro has risen from a chattel, under the guiding hand of the nation, many of the States of the south regard him yet, in their legislation, as an alien, and visit him with numerous oppressions, civil and legal disabilities.

By the laws of several States he is prohibited from bearing arms for his own defence. He cannot legally pass from one State to another without procuring permission of the authorities of the State he leaves and the State in which he proposes to settle.

In nearly all of the late slave States objectionable vagrant and apprentice laws are in force. In Mississippi freedmen are forbidden by the law to own, lease, or rent any land or homes outside of incorporated cities or towns—a very serious disability to this class of persons, as they are chiefly agricultural in their tastes and pursuits. In none are they permitted to serve as jurors. Efforts have been made to render their citizenship a mere abstraction, recognized technically, but utterly inoperative to secure them the exercise of the cardinal rights of a freedman or citizen.

An order issued from headquarters of the army of the United States, dated July 6, 1866, requiring officers of the army commanding in the south to arrest and hold for trial criminals, when the civil authorities failed to act, has had a good effect, and my officers have availed themselves of it in many cases instead of organizing courts.

Criminals have been arrested under it, and held till the proper magistrates would take up the case and grant a fair trial. Commissioners under the civil rights bill have been appointed in many of the States, and in others, officers of the bureau act in that capacity, and have succeeded to a considerable extent in bringing criminals to punishment. When these commissioners are vigilant and anxious to perform their whole duty the freedmen are very well protected.

When courts have been established they have been composed of officers of the bureau and citizens of the county in which the court was organized. They were instructed to follow the statute law of the State made for the government of white people under the same circumstances. All the records usually kept in the lower grades of courts are required by orders, and a system of inspection adopted, intended to secure a uniform administration of justice in such courts.

In order to carry out the provisions of the act of Congress continuing in force the Bureau of Refugees, Freedmen and Abandoned Lands, the following regulations were prepared and submitted for the approval of the President :

“In the organization and conduct of bureau courts, should you now have any, or have occasion under the law to establish them by direction of the Commissioner, or higher authority, you will be guided by the following instructions :

“I. Bureau courts shall be composed of three members, to be appointed by the assistant commissioner, subject to the approval of the Commissioner, one of whom shall be an officer or agent of this bureau, and the other two citizens of the county in which the court is organized.

“II. Bureau courts shall have jurisdiction of cases relating to compensation for labor of refugees or freedmen, and may hear and determine other civil cases between refugees, freedmen, and others, not involving more than the sum of \$300; they may also try offences committed by or against freedmen, provided the punishment imposed shall not exceed a fine of \$100 or imprisonment at hard labor for thirty days. The judgment of these courts may be enforced by military authority and shall not be obstructed by the stay law of any State.

“The agent of the bureau serving on a bureau court shall keep a concise record of all cases adjudicated by the court, including fines imposed, or other punishment inflicted. On the last day of each month he shall pay to the chief disbursing officer of the bureau in the State all moneys accruing from fines thus imposed, and shall furnish him a tabular statement of all the cases, giving the names of the persons fined, the offences charged, and the sentences of the court, which statement shall be used by the disbursing officer in the settlement of his accounts as a voucher for moneys received.

“III. Members of bureau courts not paid agents shall receive from parties interested in the cases brought before them reasonable compensation for their services, not exceeding the rate of five dollars per diem. Where crimes are committed against, or wrongs are practiced upon, freedmen by persons without property, members of the court will be paid for their services out of the funds arising from fines imposed for cruelties practiced upon freedmen. The agent or sub-assistant will forward these accounts to the assistant commissioner who will audit and order them to be paid.

“IV. This bureau having been established by act of Congress, and its authority being paramount over subjects relating to refugees, freedmen and abandoned lands, cases adjudicated by bureau courts will not be subject to revision before State courts or magistrates, but will be treated precisely according to the usage of military tribunals.

“V. All cases of capital crimes, felonies, or questions relating to titles to real estate will be referred to the court of the State in which the case may occur, to the court of the United States, or to military commissions.

“Very respectfully, your obedient servant,

“O. O. HOWARD,

“Major General, Commissioner.”

#### MEDICAL DEPARTMENT.

I herewith submit the report of my chief medical officer, Surgeon L. A. Edwards, whose familiarity with the medical department of the bureau enables him to present a very complete statement of its operations :

BUREAU OF REFUGEES, FREEDMEN AND ABANDONED LANDS,

Office Chief Medical Officer, October 20, 1866.

MAJOR: In compliance with your instructions of the 15th instant, from the commissioner, that I should transmit to him the annual report of the operations of the medical department of the bureau on or before this date, I have the honor to submit the following statement and remarks.

The annexed tables will show the number of refugees and freedmen, respectively, which have been under treatment during the period from October 1, 1865, to August 31, 1866.

*Consolidated report of refugees treated and died during the period commencing October 1, 1865, and ending August 31, 1866, together with number remaining at latter date.*

Districts.	Treated.					Died.					Percentage of mortality.	Remaining August 31, 1866.				
	Adult males.	Adult females.	Male children.	Female children.	Total.	Adult males.	Adult females.	Male children.	Female children.	Total.		Adult males.	Adult females.	Male children.	Female children.	Total.
District of Columbia .....																
Virginia .....																
North Carolina .....																
South Carolina .....	1,613	1,733	515	502	4,363	41	31	13	6	91	.02	95	101	21	14	131
Georgia .....	82	58	11	4	155	8	6	2		16	.01					
Florida .....																
Alabama .....	75	116	43	37	271	5		1	2	8	.02	37	42	16	16	111
Texas .....																
Louisiana .....																
Mississippi .....																
Missouri and Arkansas .....	274	397	191	143	1,005	14	23	11	9	57	.05	49	48	32	24	153
Kentucky and Tennessee .....																
Total .....	2,044	2,304	760	686	5,784	68	60	27	17	172	0.3	181	191	75	54	501

*Consolidated report of freedmen treated and died during the period commencing October 1, 1865, and ending August 31, 1866, together with number remaining at latter date.*

Districts.	Treated.					Died.					Percentage of deaths.	Remaining August 31, 1866.				
	Adult males.	Adult females.	Male children.	Female children.	Total.	Adult males.	Adult females.	Male children.	Female children.	Total.		Adult males.	Adult females.	Male children.	Female children.	Total.
Dist. Columbia.	7,476	8,982	3,281	3,310	23,049	288	176	172	144	870	.037	232	301	116	119	768
Virginia .....	8,808	9,151	3,912	4,036	25,907	361	257	154	155	927	.03	325	387	115	112	939
North Carolina .....	3,698	5,237	3,248	3,530	15,767	363	383	205	225	1,176	.069	173	229	135	194	731
South Carolina .....	15,210	18,660	8,039	8,443	48,575	362	281	155	160	958	.02	371	619	239	242	1,471
Georgia .....	4,311	3,242	1,128	842	9,523	562	322	86	71	1,041	.11	176	178	74	72	500
Alabama .....	2,549	2,595	830	702	6,676	245	164	61	178	648	.09	118	140	67	52	377
Florida .....	261	305	130	162	842	8	8	1	4	21	.02	20	23	3	4	50
Texas .....	114	102	47	35	298	9	4	2	4	19	.05	6	6	2	3	17
Louisiana .....	3,948	2,368	676	501	7,493	502	187	41	28	758	.10	260	144	30	22	456
Mississippi .....	1,742	2,152	509	502	4,905	137	110	25	21	293	.05	204	175	42	27	448
Missouri and Arkansas .....	1,096	1,513	704	722	4,035	80	61	42	40	223	.04	32	58	30	42	162
Kentucky and Tennessee .....	2,152	6,332	2,549	2,634	13,667	114	155	110	110	479	.03	52	47	15	10	124
Total .....	49,365	60,659	25,053	25,319	160,737	3,031	2,108	1,054	1,140	7,413	.046	1,973	2,300	874	824	6,051

The number of hospitals existing within the period above stated has been fifty-six; number now maintained is forty-six; present number of dispensaries and out-door stations, forty-seven.

The number of orphan asylums is five; those at Richmond, Virginia, and at Auderdale, Mississippi, are attached to the permanent hospitals established at those points. No special reports are received from these various asylums, but medicines and medical attendance have been furnished when required.

The number of medical officers in the service of the bureau during the year ending the 30th of September last is exhibited in the subjoined table, which embraces also other items of information.

*Table exhibiting the number of medical officers, hospital attendants, hospitals, &c., in the service of the bureau during the year ending September 30, 1866.*

Districts.	Commissioned medical officers.		Private physicians employed under contract.		Attendants at present employed.		Hospitals.				Colonies, camps, dispensaries.		Orphan asylums.	
	Whole number on duty in bureau from October 1, 1865, to Sept. 30, 1866.	On duty at present, September 30, 1866.	Whole number employed from October 1, 1865, to September 30, 1866.	Number employed at present, September 30, 1866.	Males.	Females.	Whole number in bureau from October 1, 1865, to September 30, 1866.	Number at present, September 30, 1866.	Capacity, beds.		Number.	Capacity, beds.	Number known to exist.	Capacity.
									Occupied.	Vacant.				
District of Columbia.	2	2	18	12	32	24	3	3	260	140	1	.....	1	.....
Virginia .....	3	1	28	14	34	21	11	9	606	254	2	.....	1	.....
North Carolina.....	4	1	14	8	16	18	8	8	228	277	.....	.....	.....	.....
South Carolina .....	5	1	28	18	6	4	4	4	304	128	.....	.....	.....	.....
Georgia .....	4	3	19	11	32	32	7	7	520	.....	.....	.....	.....	.....
Alabama .....	2	1	16	9	16	18	5	5	341	87	*1	100	.....	.....
Florida.....	4	2	2	.....	5	3	1	1	48	52	.....	.....	1	.....
Texas.....	1	1	4	1	1	2	1	.....	.....	.....	1	.....	.....	.....
Louisiana .....	1	1	18	10	40	29	2	2	362	200	*1	37	1	.....
Mississippi.....	4	1	25	8	23	21	9	3	117	213	2	.....	1	.....
Missouri & Arkansas.	2	1	10	5	4	14	3	3	109	96	.....	.....	.....	.....
Kentucky .....	1	1	4	2	4	7	1	1	80	.....	1	.....	.....	.....
Tennessee.....	2	1	10	3	.....	.....	1	.....	.....	.....	1	.....	.....	.....
<b>Total.....</b>	<b>35</b>	<b>17</b>	<b>196</b>	<b>101</b>	<b>213</b>	<b>193</b>	<b>56</b>	<b>46</b>	<b>2,975</b>	<b>1,447</b>	<b>10</b>	<b>137</b>	<b>5</b>	<b>.....</b>

\* Colony.

It will thus be seen that full provision has been made for the care of the sick and disabled persons falling under the care of the bureau. The medicines and hospital supplies have been abundant and of the best quality, being such as are issued to the United States troops.

In consideration of the very recent period at which I entered upon the duties of chief medical officer, I cannot give many details of the work of this department, as carried on in the several districts. I am happy to say that the duties of the medical officers of the bureau appear to be diligently and faithfully performed; efficient and ample provision made for the care of the sick and helpless, and that, providentially, there have been no fatally prevailing diseases or epidemics among the two classes of persons under the charge of the bureau. Cholera has appeared among them at several points, but its ravages have been limited and diminished far more than could have been anticipated. Variolous disease has also existed in some localities to a considerable extent, but the mortality has been comparatively less than might have been expected. Prompt and vigorous measures, both remedial and preventive, have invariably been adopted with energy and zeal by the officers of the bureau, with cheering and successful results.

In the general features of the system all seems to be working well, exceeding, perhaps, the reasonable expectations of every one concerned in its management; yet there are some changes, the result of continued observation and experience

which may be profitably introduced, as is the case in all new enterprises and organizations. These may be already provided for in the system of regulations adopted by the board of officers recently convened in this city for the purpose of submitting to the Secretary of War a system of rules and regulations for the government of the bureau. Not having seen them, however, I cannot say to what extent they are designed to make corrections and improvements. I would therefore present a few suggestions in relation to the system of accountability of the medical officers, the mode of paying them their monthly salaries, as also of the hospital attendants, and some few changes also in the forms of reports to be made at stated periods to this office.

Heretofore, in consequence of inadequate assistance in this office, the property accounts of the various acting assistant surgeons who have been discharged from service have not been examined and adjusted. This work has recently been entered upon. It is proposed that hereafter the final accounts of no private physician, whose contract has been annulled, shall be paid until his property returns have been examined in this office, or by the surgeon-in-chief of the district, and found correct. Whether this will be an adequate check and furnish a sufficient security to the government in connection with the system of payment proposed to be adopted, cannot be determined fully until it has been tested. For the purpose of affording a ready means of monthly payments to physicians and attendants, it is recommended that each disbursing officer of the assistant commissioner be furnished with sufficient funds of the medical appropriation, and that he be authorized to pay the accounts of acting assistant surgeons, on the approval of surgeons-in-chief of districts, and on the order of the assistant commissioner, the disbursing officer to see, in the case where the services cease in consequence of termination of contract, that payment is not made until the medical officer is furnished with a certificate of non-indebtedness by the surgeon-in-chief of the district or from this office.

In the matter of reports some variation may be properly made as to form, number, and kind. These changes will be submitted to you hereafter.

The method of obtaining medicines and hospital stores from the medical purveyors of the army, as at present pursued, is, without doubt, the most advantageous and suitable in every way. Supplies of a better quality and at less cost are thus obtained, and it seems to be, also, the only feasible plan of distributing them. The adjustment of the accounts can be made between this office and the Surgeon General's office annually or semi annually on the books of the Treasury Department.

The ration at present allowed to freedmen is not an adequate ration for the proper care and sustenance of the sick. The facts and the argument of the case have been frequently under your consideration, and I need not repeat them here, but would recommend that to all hospitals or regularly organized infirmaries or asylums, where the sick of all ages are cared for and treated, the army ration be substituted for the present freedmen's (sometimes termed "contraband") ration.

There are many articles of diet and means necessary for the proper preparation of food that are greatly needed for the comfort and welfare of the sick which are not obtainable, but which might be procured from a hospital fund if the soldier's ration was allowed to patients in hospital.

The care and treatment of the insane among the refugees and freedmen has been a subject to which the attention of the medical officers has been called, with a view to ascertain how far this obligation has been assumed and discharged by the civil authorities in the several districts of the bureau. A circular embracing several queries on the subject has been addressed to the surgeon-in-chief of each district; only a few of the replies have as yet been received. The points of inquiry were, as to the present method of caring for the indigent and insane; or there were any public institutions, State or municipal, where they were admitted; and if not, what were the objections or restrictions preventing



their admission; also, whether it was the design and expectation of the local or legislative authorities to make provision in future for the care of this class of indigent persons residing in the different cities and counties of the respective districts, and how far aid on the part of the Freedmen's Bureau was expected or desired.

A more full and complete report on this subject will be made to you on the receipt of answers to the circular from all the surgeons-in-chief. I may, however, state here that insane persons among the freedmen residing in the districts referred to have been admitted as patients into the government Asylum for the insane (St. Elizabeth) in this District, in the Virginia State institution at Williamsburg, in the State asylum of North Carolina at Raleigh, and, it may be, in some other State asylums, of which no special report has hitherto been made. There is, obviously, an obligation resting on the local authorities of the several States to provide for the indigent insane of their own population. At a time, however, when the resources of their public treasuries are not only limited, but when constant demands of various kinds are frequently made upon them, it may be regarded as within the purview of the duties and objects of this bureau to render them temporary aid in caring for these afflicted persons.

I believe it is proposed in many of the States where no present legal authority exists for admitting to their asylums insane people of color, who are free, to procure legislative action on their behalf. It may be that some further congressional action may be required in reference to the admission of this class of persons to the government asylum on the Eastern Branch. Some doubts, I believe, exist as to their legal reception therein.

In addition to the idiotic and insane classes of sufferers among the freedmen are others, greatly afflicted also, who require special care and attention, but who are not necessarily under medical treatment or restraint, I refer to the deaf and dumb. The number of each of these classes reported during the year is exhibited in the following tables, prepared some time since under a special call of the bureau for the information:

*Consolidated report of blind, deaf, and deaf and dumb freedmen.*

Districts.									Deaf and dumb.			
	Adult males.	Adult females.	Male children.	Female children.	Adult males.	Adult females.	Male children.	Female children.	Adult males.	Adult females.	Male children.	Female children.
District of Columbia.....	7	6	■	■	1	■	■	■	15	2	2	2
Virginia.....	58	47	■	1	4	■	■	■	15	2	4	1
North Carolina.....	12	6	1	1	■	■	1	1	12	1	1	1
South Carolina.....	27	49	4	■	11	11	■	2	6	2	■	■
Georgia.....	12	4	■	■	11	■	■	■	■	■	■	■
Alabama.....	■	■	■	■	■	■	■	■	■	■	■	■
Florida.....	■	■	■	■	■	■	■	■	■	■	■	■
Texas.....	2	2	1	■	■	■	■	■	■	■	■	■
Louisiana.....	■	■	■	■	■	■	■	■	■	■	■	■
Mississippi.....	6	3	■	1	■	■	■	■	■	3	■	■
Missouri and Arkansas.....	8	■	3	2	1	■	■	■	■	1	■	■
Kentucky and Tennessee....	50	31	5	1	1	2	2	■	6	5	7	6
Total.....	182	151	16	12	19	20	■	5	29	22	14	10

\*One deaf, dumb, and blind; seven idiotic. †Two dumb. ‡One blind and deaf.  
Thirteen males and one female dumb only. One male and one female child dumb only.



*Consolidated report of blind, deaf, and deaf and dumb refugees.*

Districts.	Blind.				Deaf.				Deaf and dumb.			
	Adult males.	Adult females.	Male children.	Female children.	Adult males.	Adult females.	Male children.	Female children.	Adult males.	Adult females.	Male children.	Female children.
District of Columbia .....												
Virginia .....												
North Carolina .....	1	2			1	1						
South Carolina .....	1					1				1		
Georgia .....												
Alabama .....												
Florida .....												
Texas .....												
Louisiana .....												
Mississippi .....												
Missouri and Arkansas .....	5	2	1	1							1	
Kentucky and Tennessee .....	1	3		1					2			
Total .....	8	7	1	2	1	2			2	1	1	

It is presumed that all here enumerated will not necessarily be permanently dependent upon the bureau or other charity, as some can doubtless assist in wholly or partly maintaining themselves, while others will require more or less care beyond their mere support. Friends or relations, or private charities, and the local authorities will probably, however, be enabled to render them all necessary attention.

The financial operations of the medical branch of the bureau have been carried on under a miscellaneous system of disbursement, owing to the fact that the funds used for its sustenance have been derived from various sources; sometimes from the amount of fines and dues in the hands of assistant commissioners; sometimes from the general funds of the bureau, in the hands of disbursing officers, and perhaps in other ways. Medicines and hospital stores have been furnished by the medical purveyors of the army, on proper requisitions, in accordance with the regulations established by the Surgeon General and yourself for this purpose. The medical and hospital department of the army cannot be reimbursed by the bureau for these supplies in its service, as there appears to be no funds available for that purpose, the appropriation made at the last session of Congress being deemed by the officers of the Treasury Department as applicable only for the service of the bureau for the present fiscal year. I am informed, however, by the Surgeon General that the medical and hospital department does not at present require that this amount should be refunded to carry on its operations. If, therefore, the expenditures are sanctioned by the proper authority, the necessary settlement can thus be effected at the Treasury Department. All supplies from this source furnished since the commencement of the present fiscal year (July 1, 1866) will be duly settled by this branch of the bureau from its own appropriation.

In consequence of the extension of the operations of the bureau since October, 1865, into many of the districts not then as fully organized as at present, the number of sick has greatly increased, and a few more hospitals are now in operation than were established a year since. The estimated means for the maintenance of the medical and hospital branch of the bureau for the next fi-

cal year will not exceed the amount appropriated by the act of 1866 at the last session of Congress.

The aggregate amount for each item is given in the following tabular statement:

<b>Pay</b> of private physicians employed under contract.....	\$150,000 00
<b>Medicines</b> and hospital stores.....	225,000 00
<b>Pay</b> of hospital attendants, nurses, cooks, &c.....	60,000 00
<b>Additional</b> bedding, &c.....	25,000 00
<b>Total</b> .....	<u>460,000 00</u>

To my predecessor, Surgeon C. W. Hornor, United States volunteers, much credit is due for organizing and conducting so successfully the medical department of the bureau, his experience in former administrative duties and his zeal for the service qualifying him for the task. The report on which he is now employed will be looked for with much interest.

I have the honor to be, very respectfully, your obedient servant,

L. A. EDWARDS,

*Surgeon U. S. A., and Br't Col., Chief Medical Officer.*

Major A. P. KETCHUM,

*Acting Assistant Adjutant Gen'l U. S. Volunteers,*

*Headq'r's Com'r of Bureau of Refugees, Freedmen and Ab'd Lands.*

**DISTRICT OF COLUMBIA. INCLUDING ALEXANDRIA, FAIRFAX, AND LOUDON COUNTIES, VIRGINIA, AND THAT PART OF MARYLAND EMBRACED IN THE MILITARY DEPARTMENT OF WASHINGTON.**

Brevet Brigadier General John Eaton, jr., was relieved as assistant commissioner of the district above described, by Brevet Brigadier General J. S. Fullerton, December 4, 1865. The latter was relieved February 7, 1866, and Brevet Brigadier General O. H. Howard assigned, who has continued to discharge the duties of assistant commissioner to the present time.

#### AGENTS.

The frequent complaints of outrages against freedmen and disregard of their rights from the counties of Maryland included in this district, and from Fairfax and Loudon counties, Virginia, induced an application for more officers soon after the assignment of the present assistant commissioner; and as soon as the detail could be made a competent officer was assigned to each county.

#### COURTS, LEGAL DISABILITIES OF FREEDMEN, ETC.

The ordinary civil processes of law have not been interrupted by military interference in the District of Columbia and in Maryland. A provost court for trial of cases involving colored persons continued at Alexandria, Virginia, until June 10, 1866, when it was abolished, on account of the amendment of the Virginia code by the legislature so as to allow colored persons to sue, and be parties, and testify in cases where they are concerned. One hundred and seventy (170) cases were disposed of by this court.

From Alexandria, Virginia, one instance of infringement of the civil rights act is reported, the testimony of colored witnesses being excluded. This case has been removed to the United States district court.

Under General Orders No. 44, headquarters of the army, requiring the military authorities to make arrests where the civil fail, the post commandant has, in a few instances, arrested white men for assaults upon freedmen in Fairfax and Alexandria counties. It was found necessary, also, to send a military force tem-

porarily to Loudon county for a similar purpose. Reports of outrages upon freedmen in these counties have greatly diminished since the publication of the above-mentioned orders.

The legal disabilities of freedmen in that part of Maryland embraced in this district are still practically great.

*Apprenticeship.*—There are many complaints of abuses under the apprenticeship law. Colored children have generally been bound without the consent of their parents. A report from the bureau agent regarding Calvert and Anne Arundel counties says that within a few days after the emancipation constitution went into effect, it was the practice to take the children on a farm before the orphans' court and have them apprenticed to the former owner. Instances are mentioned where the children were hired out, the former owner receiving the wages. In another case the children, after being brought into court on habeas corpus, and delivered to their parents, were hired out by the parents, thus clearly showing they were not likely to become a county charge; but they were afterwards replevined by the master, thus diverting their earnings from their parents to him. The report further estimates that there are six hundred cases of unjust apprenticing in Calvert county, and almost as many more in Anne Arundel, and the same practice has prevailed to some extent in other counties.

The agents of this bureau have given attention to this subject, and some apprentices have been released by habeas corpus. But each case of unlawful apprenticeship must be brought separately before the court, no decision having yet been made, or State law enacted, which operates generally for the release of parties unjustly and illegally apprenticed. No children are known to have been thus apprenticed since the enactment of the civil rights law.

*Civil Rights act.*—In May last a case of brutal and unprovoked assault upon Hilliary Powell, (colored,) by Dr. A. H. Somers, (white,) in Montgomery county, Maryland, was reported by the bureau agent. This case finally came before Judge Bowie, chief justice Maryland court of appeals, and the constitutionality of the civil rights law was questioned and argued by counsel. Judge Bowie rendered a decision July 2, 1866, favoring the competency of colored witnesses, and sustaining the constitutionality of the civil rights law as far as relates to this point.

Since that decision some magistrates have unhesitatingly issued warrants on the testimony of colored witnesses. But another practical difficulty arises from refusal of constables to make arrests where freedmen are involved, and to serve subpoenas for colored witnesses; still another from the bias of the men composing the jury, who have not been wont to give due weight to testimony of colored persons. As an instance of the latter, the case of William Shannon, of Calvert county, may be given. As reported by the agent of this bureau, said Shannon (colored) was attacked by a mob of white men, led by a constable, while at church; he ran and was pursued, and several shots fired at him, one wounding him in the hip; he then turned, fired at his assailants, shooting one of them dead. He was finally overtaken, carried before a magistrate, who advised his captors to take him to the woods and hang him; but he was taken to jail and afterwards indicted for murder. At the trial, which was concluded September 8, 1866, five witnesses were sworn for the prosecution, all of them parties to the assault. Twelve colored witnesses were sworn for the defence, all testifying to a state of facts directly contrary to the witnesses for the prosecution. The jury, rejecting the testimony of the colored men, rendered a verdict of manslaughter. This verdict was a compromise, two jurors being in favor of a verdict of wilful murder.

Shannon has been sent to State prison for five years. The assistant commissioner of this bureau has laid the case before the governor, with recommendation of executive clemency.

There are many statute discriminations still existing in Maryland against the

negro, especially in the local county laws. For example, in Anne Arundel and Somerset counties, license to deal in merchandise cannot be obtained by a negro unless recommended by a certain number of respectable freeholders, (white;) no white person the partner of a negro shall be granted a license; and if a white man employ a colored clerk the penalty is fifty dollars.

In Prince George county negroes are not to assemble under pretence of public worship except on certain days named in the statute. Generally it appears that the organic law of the State is not such as to prevent discrimination against the rights of the negro by county or other local authorities.

#### SOLICITORS.

Owing to the fact that no freedmen's or provost courts were in operation in Maryland and the District of Columbia, and justice, where freedmen are concerned, must be obtained, if at all, through the ordinary operations of civil courts, and especially owing to the great number of appeals to this bureau for assistance, which could only be rendered effectively in the courts, or which involved questions of law, a solicitor was appointed early in the year, who has been in attendance upon the courts in the district and in Maryland.

The report of Browne and Smithers, the present solicitors, gives for the months of August and September—

Number of civil cases referred to them by the bureau, 115; persons charged with crime, for whom they are engaged to appear at the present term, 88.

#### MARRIAGES.

Special efforts have been made in this district to re-establish the sanctity of the marriage relation among the freed people, and to correct the numerous evils resulting from its long neglect and violation. A superintendent of marriages was appointed for the district, the co-operation of all agents of the bureau was required, and that of the preachers of colored churches, and all others laboring voluntarily in behalf of the freedmen was engaged. An act was passed by the legislature of Virginia, last winter, legalizing existing marriages of freed people, and otherwise regulating this matter. A similar law was enacted by Congress, approved July 25, 1866.

Circulars have been published containing these laws, and abstracts of other laws relating to this subject, as well as other regulations to remedy the existing evils.

Some legislation similar to that in Virginia is highly desirable in Maryland

#### RELIEF ESTABLISHMENTS, ORPHAN ASYLUMS, ETC.

At Freedmen's Village, Arlington heights, Virginia, a home for aged and infirm and permanently disabled freedmen has been continued throughout the year. Inmates at present, 90. Those who are able have assisted in working a vegetable garden, and some of the women have been employed at the industrial school to some extent. A similar home has been sustained at the Soldiers' Rest in Alexandria; number of persons cared for averaging 70.

The Colored Orphans' Home has been in successful operation in Georgetown, under the auspices of the Ladies' National Association for the Relief of Destitute Colored Women and Children. 109 orphans have been received, and 21 sent to good homes provided for them in the different northern States. On the restoration of the property where their home has been located to the former owner it became necessary to provide for it elsewhere. For this purpose a lot has been purchased on the extension of Eighth street in this city, and a building is in process of erection by this bureau, a portion of which is to be in readiness for use by the first of November.

A school farm for colored orphans was established by M. De Mareil, with some assistance from this bureau, near Eastern branch, Washington, District of Columbia, in the month of March. Boys only are received. The number at present is thirty-one.

*Tenements.*—Owing to the fact that many of the abodes of the freedmen in this city and Alexandria were in the most miserable huts, contracted, filthy, and not protecting them from the inclemency of the weather, and even for these shanties most exorbitant rents being charged, tenements were prepared in certain of the public buildings in possession of this bureau. Four barracks were thus fitted up in and around Washington, accommodating some three hundred and fifty (350) families, and a like number in Alexandria for one hundred and eleven (111) families.

At Freedmen's Village, Arlington, two hundred and fifty (250) families have tenements. These families pay a moderate rent, generally about one-third of amount paid for the shanties they have left. This has had the effect to reduce the rents charged by the landlords, who found their tenants rapidly vacating.

*Farms, renting of land, &c.*—Notwithstanding all efforts to reduce the number of freedmen in this District, by securing for them employment elsewhere, it was found that there was still a great number in the spring who could not find work at wages adequate to the support of their families.

Brevet Colonel S. P. Lee, superintendent of Alexandria, Fairfax, and Loudoun counties, Virginia, was therefore authorized to rent some five hundred and fifty (550) acres of land, at a cost of eight hundred dollars (\$800) per year, in the vicinity of Camp Distribution, where were barracks which could be used for tenements. This land was sub-rented to heads of families in lots of from five to forty acres.

Colonel Lee reports that they generally have good crops of corn, and will be able to pay expenses, including rent.

In like manner that part of Arlington estate consisting of four hundred (400) acres of cultivable land, which had been worked as a government farm last year, was rented in small lots to freedmen, with the exception of some eighty (80) acres, which had already been sowed to wheat. As this land is the property of the government, only a nominal rent is charged.

In St. Mary's county, Maryland, where last year some thirteen hundred (1,300) acres were cultivated as government farms, and some five hundred (500) people who had accumulated there during the war were provided with homes, the amount of land has been reduced by restoration to former owners, so that only two hundred and sixty-five (265) acres were under cultivation the past season. Orders have been given for the evacuation of this farm about the first of December, and rent is paid for its use the past season.

Employment and homes in Maryland and Virginia have been found for all of the people except the infirm, who have been sent to the home at Arlington.

#### MEDICAL DEPARTMENT.

The number of hospitals in the district is three: one at Washington, capacity two hundred (200) beds; one at Arlington, fifty (50) beds; one at Alexandria, one hundred (100) beds.

Number of medical officers on duty, fourteen, (14.) The cities of Washington and Georgetown are divided into five medical districts, and an acting assistant surgeon assigned to each, who attends those patients at their homes, whom it is not advisable to remove to the hospitals. An extra diet kitchen is also in operation, to provide suitable food for those sick at their homes, under charge of ladies who devote their time gratuitously to this benevolent work.

The total number of patients under treatment from November 1, 1865, to October 1, 1866, 22,798. Of these 21,239 were discharged cured.

The number of deaths was 752. Number remaining under treatment Sep-



September 30, 1865, 807. The average of mortality thus being shown to be remarkably low, 33 per thousand of the cases under treatment.

*Cleansing of quarters and localities of freedmen.*—The chief medical officer of the district, Surgeon Robert Reyburn, states that undoubtedly the mortality has been largely diminished, and a remarkable exemption from epidemic diseases insured by the thorough cleansing of the dwellings and localities of the freedmen, effected by the local superintendent, Brevet Major W. F. Spurgin, acting under orders from the assistant commissioner.

The dwellings and surrounding grounds were cleansed, and the dwellings whitewashed inside and out. One thousand (1,000) barrels of lime were thus expended in this city, Georgetown, and Alexandria.

The mayor of Washington cheerfully co-operated in these sanitary measures.

#### SCHOOLS.

Whole number of schools, 74; teachers, 132; scholars, 6,552. Of these scholars seven hundred and ninety-nine (799) are in the alphabet, the remainder all having learned to read.

The night schools have not been fully reported. Average number about 15; of scholars, 800.

Sabbath schools not connected with colored churches, 20; number of scholars, 2,400.

The assistant commissioner commends his superintendent of education, Rev. John Kimball, for his zeal and diligence in his duties.

Ten (10) freedmen's aid societies have assisted in sustaining the schools. Salaries of teachers are not paid by this bureau. Forty five (45) day schools were carried on in buildings provided by this bureau and supplied with necessary furniture. Buildings for thirty-two (32) day schools have been provided and fitted up during the year. The trustees for colored schools, appointed in accordance with an act of Congress by the Secretary of the Interior, have co-operated by providing lots upon which school buildings have been erected by this bureau. These buildings are mainly constructed from second-hand lumber, already in possession of the government. Most of the schools were visited by the assistant commissioner during the last session, and often by the superintendent, and a public examination was held in them all. The report of the school superintendent says: "The general good conduct and rapid progress in scholarship have been such as to surprise and gratify their most sanguine friends."

#### INDUSTRIAL SCHOOLS.

Whole number of industrial schools, 7; all but one (1) in buildings provided by this bureau.

Large amounts of clothing were made, repaired, and distributed by these schools, besides furnishing employment to some 369 women and teaching them in various kinds of work.

#### RATIONS.

Whole number of rations issued from January 1 to October 1, 1865, 629,276.

For the month of September the issues were as follows:

Hospital at Washington, D. C., (including the issues to the sick at their homes and to the orphan asylums).....	16, 720
Hospital at Freedmens' Village .....	6, 079
Hospital at Alexandria, (including home for infirm) .....	11, 940
Home for aged and infirm at Freedmen's Village .....	5, 515
Sand Gate's farm, Maryland, (including employes).....	2, 760
Total.....	<u>43, 014</u>



An order was promulgated by the assistant commissioner in March last, cutting off on the 10th of April, 1866, all rations in this district, except to the sick, the inmates of the orphan asylums, and the infirm at Freedmen's Village. This was rendered practicable by the operations of the employment offices, by which means all the able-bodied were offered remunerative employment.

The requirements of Circular No. 10, War Department, Bureau Refugees, Freedmen and Abandoned Lands, discontinuing the issue of rations in all the States on the 1st of October, caused therefore little or no change in this district. In accordance with that circular an application was made to the county court of Alexandria county, Virginia, to provide for the infirm and indigent of the Alexandria Home, but the court declined to make any provision on the ground of a lack of the necessary funds, claiming also that many of these poor were only sojourners, and not strictly residents of the county.

#### EMPLOYMENT OFFICE.

The employment offices, two in sole charge of this bureau, and one partially sustained by the National Freedmen's Relief Society, of this city, (the latter in charge of Mrs. Josephine Griffing,) have been very effective. Branch offices were opened at the instigation of the assistant commissioner in Baltimore, Philadelphia, and other northern cities, sustained generally by the freedmen's aid societies. Planters and others came also from several of the southern States for hands, and usually obtained them, making their own contracts with the freedmen, and receiving the co-operation of this bureau when they gave satisfactory assurances of fair wages and kind treatment. The reports of these officers give, whole number furnished with employment, 5,192. This includes those provided with homes by Mrs. L. M. E. Ricks, operating a part of the time solely from individual benevolence, and lately in employ of this bureau.

The above figures would be increased by full reports from some others who have been engaged in this work from motives of personal benevolence, or as agents of aid societies.

There are still vast numbers who ought to leave this district. A census taken by this bureau last winter and spring shows the colored population in Washington of 27,287; in Georgetown, 4,262—aggregate, 31,549. Subtracting the 5,000 leaves still 22,000—a much greater number than can be employed here.

As the surest means, therefore, of relieving the government of the future support of many of these people, as well as to give them all the benefits of independence, and vastly improve the condition of such as may remain, their removal, with their own consent, to other States, where labor is in demand, has been encouraged in every possible way by this bureau. Transportation has of late been furnished; agents employed in this and other cities to give their attention solely to this work; meetings have been held, and various other means resorted to, to induce the colored people to go; but the call for laborers is still much greater than the supply. There seems to be great reluctance on the part of the majority to leave even the miserable homes they have established here, and start forth to parts of the country new and strange to them.

#### CONGRESSIONAL APPROPRIATIONS FOR RELIEF OF THE DESTITUTE IN THE DISTRICT OF COLUMBIA.

A special appropriation was made by Congress, approved April 17, 1866, for the poor in this District, and the Commissioner of this bureau charged with its disbursement. To carry out the intent of the resolution of Congress, a special relief commission, consisting of six members, was organized under the immediate direction of the assistant commissioner. The cities of Washington and Georgetown were divided into four districts, with a superintendent for each, and sub-

vided into twenty-two (22) sub-districts, and a visiting agent appointed for ach. The latter, excepting two, perform the duties gratuitously, and deserve reat credit for their assiduous and self-denying labors.

The president of the commission, Surgeon Robert Reyburn, United States olunteers, renders a weekly report of its operations, of which the following is summary: Number of persons relieved, whites, 965; colored, 827—total, 1,792.

Amount of appropriation.....	\$25,000 00
Relief afforded on recommendation of visiting agents, for whites.	3,421 22
Relief afforded on recommendation of visiting agents, for colored persons.....	2,665 14
Other relief approved by special relief commission.....	1,329 10
Salaries of agents.....	183 00
Total.....	7,598 46
Balance not yet drawn upon.....	17,401 54
Outstanding order not yet paid.....	937 13
Total on hand October 1, 1866.....	18,338 67

The amount expended has been chiefly in small sums, for groceries, clothing, fuel, &c., for those actually in need.

By employing the agents of this bureau, as well as by securing the gratuitous services of many benevolent citizens as visiting agents, a remarkably small amount of the congressional appropriation has been expended for salaries.

STATEMENT OF FINANCES.

The following is an exhibit of receipts and expenditures from November 1, 1865, to September 30, 1866, from the books of Brevet Major J. M. Brown, quartermaster for the district under consideration.

Refugees and freedmen's fund.

RECEIPTS.

On hand November 1, 1865, last report.....	\$27,621 55
By cash received on account of funds for benefit of colored women and children and hospital purposes by order of the Secretary of War.....	281 99
By cash received from rent of buildings.....	7,398 95
By cash received from sales of crops.....	9,352 12
By cash sales of clothing to freedmen.....	2,393 38
By cash received from Colonel C. W. Balloch, chief accounting and disbursing officer Bureau of Refugees, Freedmen and Abandoned Lands.....	33,256 55
By cash fees of intelligence officers.....	928 04
By cash sales of buildings.....	1,223 50
Total receipts.....	82,456 08

EXPENDITURES.

Paid for agricultural tools and materials.....	\$1,459 40
Paid for field and garden seeds.....	541 46

Paid for labor-hire and services, superintendents and contract surgeons, clerks, overseers, hospital attendants, carpenters, laborers, &c. ....	\$69, 188 3
Paid for lumber and material, building.....	3, 677 12
Paid for stationery.....	1, 755 3
Paid for stores for indigent freed people.....	3, 523 5
Paid for rents.....	1, 091 12
Paid for postage.....	10 90
Paid for advertising.....	95 50
Balance carried to new account .....	1, 122 8
<b>Total expenditures.....</b>	<b>82, 456 06</b>

*Appropriation of Congress from July 1, 1866, to September 30, 1866.*

RECEIPTS.

By cash received from Colonel C. W. Balloch, chief accounting and disbursing officer Bureau of Refugees, Freedmen and Abandoned Lands.....	\$22, 062 34
Cash received on account of freedmen's fund.....	60 00
<b>Total.....</b>	<b>22, 127 34</b>

EXPENDITURES.

Paid on account of salaries of clerks and employés.....	\$6, 872 12
Paid for stationery and printing.....	1, 937 22
Paid for quarters and fuel.....	970 19
Paid for clothing for distribution.....	851 72
Paid for subsistence stores.....	
Paid for medical department.....	4, 055 16
Paid for transportation.....	612 46
Paid for school superintendents.....	528 75
Paid for repairs and rents of school-houses and asylums.....	6, 043 63
Paid for telegraphing and postage.....	10 23
Balance due the United States.....	18 86
<b>Total expenditures .....</b>	<b>22, 127 34</b>

Since July 1, 1866, the "refugees and freedmen's fund" has been drawn upon for such necessary expenditures as could not strictly be classed under the objects specified in the appropriation by Congress.

The report with regard to this district is made very much in detail, as a sample of the duties devolving upon the assistant commissioner, and of the manner of their accomplishment.

VIRGINIA.

General O. Brown was relieved as assistant commissioner, and General A. H. Terry, department commander, ordered to assume the duties by Special Order No. 192, War Department, April 26, 1866.

General Brown had proved an active efficient officer, and was retained on the staff of the department commander in charge of freedmen's affairs.

General A. H. Terry having been relieved by orders from the War Department, General Schofield became assistant commissioner by direction of the Secretary of War.

General Brown, by his energy and adaptation to the work, organized the bureau, and has preserved an excellent system of business.

The State is divided into eight (8) districts, with an officer in charge of each, who reports to the assistant commissioner. In these districts officers are stationed at points where they can be reached by the people under their supervision. Inspectors from this office report uniformity of action among the officers, a completeness of records, and other evidences of faithful service.

For many reasons the duties of assistant commissioner have been complicated and onerous.

The people have felt the disastrous effects of the war in nearly every county of the State, yet are slow to comprehend and conform to the change in the condition of the freedmen. The military commander, assistant commissioner, and governor, have worked very cordially together.

The transfer of jurisdiction over all matters pertaining to the administration of justice is being made as fast as security can be obtained that such a transfer will not be abused. In districts where the civil authorities have been invested with full power to try and punish freedmen for crimes complaints are frequently made of the manifest injustice of the judicial officers, and the abuse of authority on the part of the executive officers of the State government. When a fair trial is granted the prisoners punishments are often of cruel severity, and sometimes executed in a barbarous manner. The legislature failed to make the necessary changes in the law to secure to the freedmen all the rights guaranteed to white citizens. The provisions now on the statute book are still partial, and in the hands of prejudiced magistrates may be, and are too often, used for the oppression of the colored man. In some instances bureau courts have been re-established by the assistant commissioner.

General A. H. Terry reports: In three counties it has been necessary to re-establish the bureau courts to prevent insurrection among the freedmen, who were threatening retaliation for the injustice done them by the civil courts.

Some improvement is reported in the feelings of the whites towards the freedmen, and yet the numerous murders and robberies of which this office is notified are evidences of bad feeling, or weakness on the part of State officials, whose duty it is to preserve the peace and punish crime.

There have been more laborers in Virginia than were necessary to cultivate the lands; for this reason wages have been low, and, in some localities, the freedmen have manifested a disposition to idleness. In those districts where good wages have been paid no difficulty has been found in employing freedmen. They have worked industriously and quietly. Many planters have expressed their approbation of the conduct of the freedmen, and given officers of the bureau credit for aiding in settling labor upon just principles.

In those counties where there was necessarily a large accumulation of freedmen during the war many dependent are still drawing rations. Home farms have been discontinued, and camps of all kinds broken up, and people sent to points where their labor would secure them a living.

But little abandoned property is held by the assistant commissioner, as it has been restored, in accordance with instructions from this office.

Great destitution does not exist, although the assistant commissioner reports that it will be impossible to withdraw the support of the government entirely from the people of some districts.

The whole field of education in Virginia has been gradually enlarged, and schools are demanded in new localities. The better class of white citizens favor the elevation of the negro, and a considerable number of earnest calls have been made by them for teachers and books. Much has been done by northern benevolent associations. The freedmen show an appreciation of the educational advantages that are now extended to them. One hundred and twenty-three (123) schools, two hundred (200) teachers, and eleven thousand seven hundred and eighty-four

(11,784) pupils, with an average attendance of eight thousand nine hundred and fifty-one are reported.

The number of rations issued from June 1, 1865, to September 1, 1866, one year and three months, is as follows: Aggregate, 2,403,543—to whites, 13,990; to freedmen, 2,389,553. Average rations per month, 160,256. Average freedmen and refugees assisted daily, 5,342.

#### NORTH CAROLINA.

Brevet Brigadier General E. Whittlesey, having been assigned as assistant commissioner of this State at the organization of the bureau, continued to discharge the duties of his office till the 16th of May, 1866, when, in pursuance of an order of the War Department, based upon complaints made by Generals Fullerton and Steedman, inspectors, he was relieved by Brevet Major General P. H. Ruger, commanding the department of North Carolina. General Ruger was shortly assigned to other duties, and by virtue of a special order of the War Department, dated June 20, 1866, was succeeded in the assistant commissionership by Brevet Major General John C. Robinson, who is still in charge of bureau affairs in this State.

The State is divided into twenty-eight sub-districts, each of which is in charge of an officer of the bureau, and so organized as to enable the assistant commissioner to inform himself of the location of families likely to become dependent upon the government, and to place them in the way of obtaining suitable employment.

But little abandoned property is now held in this State, the greater portion of it having been restored under orders to the former owners.

Until the 1st of July last the expenses of the bureau in North Carolina were defrayed out of a special freedmen's fund, previously created in that State. This having been exhausted, those expenses are now a tax upon the treasury of the bureau.

Early in the current year the jurisdiction of the assistant commissioner over all cases of violence and outrage was gradually transferred to the civil courts, as they were beginning to show a disposition to receive the testimony of witnesses without distinction of color. Cases in which white persons were accused of offences against freed people were reserved at that time for trial before military tribunals. Subsequently, an act of the legislature was passed "concerning negroes and persons of color," which conferred upon negroes the right to testify "in all controversies at law and in equity when the rights of persons or property of persons of color shall be put in issue and would be concluded by the judgment or decree of court; and also in pleas of the State where the violence, fraud, or injury alleged shall be charged to have been done by or to persons of color." It was provided further, however, that this section should not go into effect until jurisdiction should have been fully committed to the civil courts. As a variety of opinions obtained among citizens of the State as to the legal force of this enactment, and a general uncertainty prevailed in regard to its practical effect, it was not deemed expedient to make an immediate and complete transfer to the civil courts of the jurisdiction of bureau officers over cases which were coming before them. Owing to a subsequent modification of the laws affecting colored persons, the governor of North Carolina officially notified the assistant commissioner that "there now exists, under the laws of this State, no discrimination in the administration of justice to the prejudice of free persons of color." General Robinson thereupon, on the 13th of July last, directed his officers and agents to refer all cases in which freedmen were parties to the proper county or State authorities, according to the nature of the case, and with the single exception of claims for wages due under contracts approved or witnessed by officers and agents of the bureau, which, not admitting of delay, would be adjudicated as before.



In case of failure, neglect, or inability of the civil authorities to arrest and bring to trial persons charged with crimes and offences against citizens, irrespective of color, officers in charge of districts were directed to arrest and detain such persons till such time as a proper judicial tribunal should be ready and willing to try them.

In June, General Robinson reported a fair administration of justice on the part of the civil courts, and believed that after sufficient time had elapsed for an adjustment of the new relations subsisting between the two races, mutual confidence would be restored.

By August report it appears that during the month of July but one outrage committed by a freedman upon a white person was reported to the assistant commissioner, while there were no less than forty-nine cases of assault, whipping, false imprisonment, and shooting, in which whites were the assailants and blacks the sufferers. Nearly all of these cases were turned over to the civil authorities, and in some instances the offenders were proceeded against. A report has also been made to the State authorities of numerous outrages more recently committed by whites against colored persons, and immediate prosecution urged. These offences embrace cases of assault and battery, rape, church-burning, arson, and murder. In a majority of them the offenders have been required to give bonds for appearance at the proper term of the courts to answer the charges.

The demand for labor in some portions of the State is much greater than the supply, and as soon as the planters are notified of the points at which they can obtain laborers, they promptly avail themselves of the information.

The contract system works favorably. In one section it was complained that employers desired to turn off their laborers before the gathering of the crop. But very few complaints are made against freedmen for refusing to work. The approval of contracts by agents of the bureau has had an excellent effect in securing a compliance with their provisions. The freedmen of the State have been almost universally at work and supporting themselves.

Prior to the summer vacation there were in successful operation in the State one hundred and twenty-nine (129) schools, embracing one hundred and fifty (150) teachers, and attended by more than ten thousand (10,000) pupils. They are mainly under the patronage of northern benevolent societies, and in a fair way of being permanently established, the title to the ground upon which they stand having been obtained in numerous instances.

The condition of the hospitals is good. The excellent sanitary condition of the freedmen throughout the State is to be attributed in great measure to the energy and skill with which the medical department of the bureau for North Carolina has been conducted. The number of rations issued to dependents has been continually decreasing. The assistant commissioner refers to the small number of freedmen requiring assistance as an evidence that they will work for themselves and support their families, now that they know they may reap the fruits of their labor. He continues: "With a negro population of more than three hundred thousand, (300,000.) many of whom were from other States, and naturally unwilling to settle down to work here, the labor experiment has been tried, and at this time of the second harvest realized in this State by means of free labor, there are, at the largest estimate that can be based on careful reports, not more than twenty-five hundred (2,500) freedmen who have not placed themselves and families out of the reach of want for the year." It is not claimed that they have gained a competency, but that no more than that number now declare themselves objects of charity, and these, it is to be remembered, are persons who, by reason of age, infirmity, and disease, would be a charge on society in any State, and at any time.

In order to reduce expenditures so far as possible, the assistant commissioner has ordered the removal to the orphan asylums near Newbern of all orphans now in camps west of Raleigh, Salisbury, and Charlotte. The Charlotte hospital will



probably be removed to Salisbury, and the camp at Charlotte be immediately dispensed with.

#### SOUTH CAROLINA.

Considerable progress was made in the organization of the bureau in this State, under the administration of Brevet Major General R. Saxton, who, by an order of the War Department, was mustered out of the volunteer service in January last, and immediately succeeded in the assistant commissionership by Brevet Major General R. K. Scott.

A variety of conflicting interests rendered exceedingly perplexing the subjects which General Scott was called upon to consider. His course has been practical and judicious, and has commended itself so forcibly to the minds of all classes of citizens, that great good has resulted therefrom to the industrial interests of the State.

A careful arrangement of districts and sub-districts, with the appointment of responsible agents to the charge of them, has enabled the bureau to be in ready communication with any who might require the assistance or co-operation of its officers.

Prior to the passage of the law of July 16, 1866, continuing the existence of the bureau, the restoration of lands set apart by General Sherman's Special Field Order No. 15 was proceeded with in conformity with the general instructions I had received, and the plan referred to in my last annual report. Unoccupied plantations were restored when the owner complied with the requirements of Circulars 15 and 20, series of 1865.

In few instances only were the freed-people willing to relinquish their claim upon the soil by subscribing to contracts for labor with the former owner. Leases were occasionally accepted, and greatly preferred by the freed-people to mere labor agreements.

As the planting season was advancing and there seemed little prospect of adjusting the various interests involved acceptably to all concerned, I directed a settlement to be made for the year based upon the instructions contained in the following letter :

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, March 8, 1866.*

GENERAL: Being unable to obtain positive instructions, and there being much delay in legislation with regard to the land set apart under General Sherman's order, I deem it best to locate definitely those who occupy land rightfully under authority of the above-named order, holding them in possession until some definite action is had by the government.

The rest of the estates or parts of estates will be restored in accordance with Circulars 15 and 20, series 1865.

Care will be taken to arrange the settlements with a view to the working of the plantations, so as to relieve the planters as much as possible.

With reference to certificates of title, when lands have already been restored, please notify the holders to preserve carefully their certificates.

Very respectfully, your obedient servant,

O. O. HOWARD,  
*Major General, Commissioner.*

Brig. General R. K. SCOTT,  
*Assistant Commissioner, &c.*

The claims of these settlers were subsequently considered by Congress, and definitely arranged by the law of July 16, 1866.

In South Carolina on the 1st of June there were in successful operation sev-

seventy-five (75) schools, numbering one hundred and forty-eight (148) teachers, and nine thousand and seventeen (9,017) pupils; and besides these, plantation and private schools, usually taught by colored persons, to the number of thirty-eight (38) or more, including forty (40) teachers and three thousand (3,000) pupils; making an aggregate of twelve thousand (12,000) pupils regularly instructed; an increase of two thousand (2,000) within six months.

In the schools regularly reported six thousand two hundred and fifty-six (2,556) pupils are pure blacks, three thousand and forty-nine (3,049) of mixed blood, and only eight hundred (800) were free before the war. Of the fifty-eight (58) native southerners who are teachers fifty (50) are colored persons. The foregoing statements are noticeable on account of the fact that the state society in South Carolina has been greatly unsettled, and the demands for laborers incessant. In consequence of this many of the schools, even in cities, in January lost their most advanced pupils, who were replaced by children fresh from the fields, knowing absolutely nothing of letters.

For the year's support of the seventy-five (75) schools regularly reporting there has been expended \$72,000, contributed mainly by northern associations, amounting to a cost of about eight (8) dollars for each pupil.

The intense desire of the freed people of this State for education is clearly apparent. They are making strenuous endeavors to secure for their schools permanent sites and buildings; have already erected five houses, and are in process of erecting others, chiefly by means of their own money and labor, and upon land secured to them by legal title.

Among the white residents there is a growing conviction in favor of the education of freedmen, although very few are yet willing openly to co-operate to this end with northern people. The presence of turbulent and inconsiderate men in many portions of the State has occasioned a very prevalent apprehension that, in proportion as the federal power is withdrawn, will public opinion and the government of the State prove ineffectual to protect the schools from the violence of evil-minded persons.

Great benefits have accrued to the freed people and refugees through the medical department of the bureau in this State. Its agencies have been widely extended, and the friendship and co-operation of the civil authorities secured, so that in the larger cities particularly its efficiency has been very generally conceded and gratefully appreciated. Diseases of a malignant type have prevailed among the freedmen of the eastern counties, who were peculiarly subject to them on account of their privations during the closing months of the war. Their sufferings, however, have been greatly alleviated, and the spread of disease substantially checked, through the prompt action of the medical officers of the bureau.

Great destitution and suffering have prevailed throughout the State among all classes of the inhabitants, and particularly at Charleston. By a supply of food and clothing starvation and death have been prevented in numerous instances. Unless the State authorities will assume the care of these people, who are a legitimate charge upon the State, it is impossible to say how long they may remain a burden upon the general government.

The general condition of the freed people is promising. In May the assistant commissioner reported that they had entered into contracts with a willingness and unanimity beyond the expectation of the most sanguine persons in the State, and that he was daily receiving from citizens and officers most flattering reports commendatory of their good conduct. Planters asserted that in most cases they were "doing more work than was ever done under the old system of forced labor."

The State has suffered severely from drought, and in certain sections also from a disorganized condition, which has been such that bands of outlaws and desperadoes have travelled through some of the counties almost without interruption, terrifying the freed people, and practicing upon them the most barbarous

cruelties. Subsequent action of the military authorities served to check the proceedings, but not until the labor interests of the State had been materially affected.

After the discontinuance of bureau courts in the State, jurisdiction over cases in which colored persons were parties remained substantially with the military provost court. Quite recently, however, the Legislature has annulled the most objectional provisions of the statute law discriminating against persons of color, and the department commander has accordingly ordered the discontinuance of provost courts as soon as the district courts shall be organized, and directed that, except at the military reservation of Hilton Head, and on the sea-islands included within the territorial limits of that post and of the post of Charleston, all cases, civil and criminal, in which the parties are civilians will be turned over to the judicial tribunals of the State having the jurisdiction of the same.

The current expenses of the bureau in this State have been principally defrayed, since January last, out of the general bureau fund. From June 1, 1865 to September 1, 1866, the aggregate number of rations issued was 1,111,847—to whites, 124,144; to freedmen, 987,703. Average rations per month, 74,114; daily average, 2,470.

#### GEORGIA.

There has been no change in the assistant commissionership of this State since the date of my last annual report, the duties of the office having been discharged by Brevet Major General Davis Tillson, the present incumbent.

General Tillson reports that the disposition on the part of employers to discharge their laborers without payment of wages earned has been partially overcome, but that the drought has so affected the crops in many sections of the State that planters have not raised provisions enough to support themselves until the next harvest, and, having no ready means with which to pay their laborers, discharge them. This course has been so universal, he adds, that many of his agents have urged an increase of their jurisdiction and powers, to enable them to put an effectual stop to it, a request with which he has not complied, believing that to do so would be at variance with the intentions of the government relative to the restoration of civil law to its full power as soon as practicable.

It is reported that the civil courts show a disposition, in most cases, to do justice to the freed people, but that, unfortunately, the jurors, selected frequently from a class of citizens who hate the negro, attach little weight to his testimony. Improvement in this respect is occasionally manifest, but it is believed that considerable time will elapse before the colored people will enjoy substantial equality before the law.

While the higher tribunals are more careful to regard their rights, in the inferior courts, in many cases, through the prejudice of the people and incompetency of magistrates, the freedmen are denied the protection of law, and the interference of the bureau is rendered necessary to secure justice. In numerous instances such an interference wisely conducted has secured favorable results, assisting the freedman personally, and so affecting the temper of the people as to make the recurrence of acts of injustice and oppression less frequent than before.

The bureau still sustains an important and vital relationship to the agricultural and educational interests of the State. Planters depend upon it to some extent to make laborers reliable; freedmen that they may be aided in obtaining their wages. It is believed that the labor system of Georgia, as organized and enforced by the bureau, if left at this time to the control of State agencies, would be practically broken up.

During the six months immediately preceding the summer vacation the schools of Georgia more than doubled the number of their pupils, and, under

gorous superintendence, are now in a very satisfactory condition. Thirteen (13) schools were recently opened at points where none existed before. Although educational expenses in this State are defrayed mainly by charitable societies the freedmen take a deep interest in schools, and by their own contributions are making effectual and commendable efforts to secure the education of their children. Seventy-nine (79) schools regularly reporting include one hundred and thirteen (13) teachers, and are attended by nearly eight thousand (8,000) pupils, three thousand (3,000) of whom, it is estimated, are now able to read, who six months ago were unacquainted with the alphabet.

The white inhabitants of the State who have been opposed to the education of the colored people have occasionally resorted to threats and violence, and thereby effected the breaking up of schools in several instances.

In the hospital at Savannah, during the month of August, there were fifty-four (54) cases of cholera, thirty-nine (39) of which proved fatal. According to latest advices the disease had somewhat abated, prompt measures having been taken to secure an additional attendance of physicians.

The severe drought, which prevailed during the summer months has caused great destitution in northern and middle Georgia. Promising crops have been utterly destroyed. In September there were receiving rations from the government thirteen thousand seven hundred and fifty-eight (13,758) freed people, and thirty-eight thousand five hundred and sixty-eight (38,568) whites.

As there is reason to believe that great suffering and destitution will prevail during the approaching winter throughout the greater portion of Georgia, it is earnestly hoped that some provision for the poor will be made by the State authorities.

A considerable amount of property, which would otherwise have been lost to the government, has been found in this State, taken possession of by the bureau, and properly accounted for.

The number of rations issued during the fifteen months ending September 1, 1866, was 847,694—to whites, 172,998; to freedmen, 674,695; average rations per month, 56,513; average number of refugees and freedmen assisted daily, 1,884.

Property on the sea-islands of Georgia, reserved for freedmen under the order of General Sherman, has been held or disposed of in the same manner as sea-island property in South Carolina.

General Tillson has been energetic and efficient in the settlement of difficulties on these islands.

#### FLORIDA.

Brevet Colonel T. W. Osborn discharged the duties of assistant commissioner of this State until June 1, when Brevet Major General J. G. Foster, commanding the department of Florida, was made assistant commissioner; he retaining Colonel Osborn in charge of his old duties as a staff officer. This change was made in carrying out the plan to unite the duties of assistant commissioner and military commander. Colonel T. W. Osborn faithfully executed his duties, and won the approbation of General Foster and the provisional governor. He was mustered out of service September 1.

The State laws are not as liberal in their provisions as the acts of Congress require. A disposition is manifested by many of the officials to remedy the evil at the next session of the legislature. The assistant commissioner has relinquished control over all cases that can be brought before the courts in accordance with instructions from this office. With reference to the effect of this action, General Foster says: "There seems to be an improvement in the treatment of the negroes by the courts and by the planters, and I think both are commencing to appreciate the fact that it is for their interest to treat the colored people with justice and kindness. It is observed in those counties in which

the courts have imposed heavy and unjust fines upon the negroes, that the latter have almost invariably run away; the county thereby losing the labor which it ought to retain. It is also observed that those planters who deal justly and kindly with the negroes in their employment receive from them in return more faithful and industrious service, and are better able to obtain laborers when their services are most needed."

Probably there has been less abuse of freedmen in Florida than in any other of the extreme southern States. The present organization of the bureau is very complete, and enables the assistant commissioner to keep himself thoroughly informed upon the condition of affairs, as well as furnish information for all reports that may be required.

Contracts for this year's labor were made under the supervision of bureau officers, and, in accordance with regulations promulgated by the assistant commissioner, they will be enforced by the same power in all cases when necessary. Reports from all parts of the State place the general good conduct of the freedmen beyond question.

General Foster has made great exertions to obtain a full description of all public lands, that the information might be placed before the colored people of other States. An agent is at the work, but has been unable to complete his labors in time for this report. Parties of colored people in South Carolina are said to be waiting for this information, that they may secure homes under the homestead act.

The schools have been encouraged by State action. A law was passed appointing a general superintendent, with assistants, whose duty it is to establish colored schools in all the counties. A tax was levied upon the colored people to support this system, and the organization of schools begun. Twenty-five day schools and sixty Sabbath schools are already in operation. This is a move in the right direction, and should be followed by every southern State. The following shows the general result of educational effort:

Whole number of schools under benevolent associations and State supervision.....	38
Whole number of teachers.....	51
Whole number of pupils.....	2,663

Necessity has compelled the support of an orphan asylum and hospital by the bureau. It has been impossible to obtain assistance for the poor from local authorities. The crops are reported good this year, and but little destitution among the colored people on plantations.

The number of rations issued from June 1, 1865, to September 1, 1866, (one year and three months,) was as follows: Aggregate, 25,665—to whites, 3,580; to blacks, 22,085. Average rations per month, 1,711; average freedmen and refugees assisted daily, 57.

#### ALABAMA.

Major General Wager Swayne was appointed assistant commissioner of this State at the organization of the bureau, and has managed freedmen's affairs in an able and satisfactory manner. He wisely obtained the co-operation of the governor, and, in great measure, the State authorities, in carrying on the objects of this bureau, and has retained their confidence and support. In no other State has there been so much harmonious action between the State officials and the agents of the bureau.

At the time the offices of military commander and assistant commissioner were united it was thought best to add to the duties of General Swayne the command of the district of Alabama. Since then he has been enabled, by having command of the troops in the State, to discharge with efficiency the duty of assistant commissioner.



But little abandoned property has ever been held by the bureau in this State. The funds to defray the expenses of this department of the bureau have been raised by the sale of captured confederate property. An order was obtained for the transfer of all such funds to the assistant commissioner, and authorizing him to sell all property remaining on hand.

The laws of the State in regard to freedmen, as far as they do not conflict with the laws of Congress, are in force, and are not interfered with by military authority.

The bureau was organized in Alabama so long after the surrender, and the assistant commissioner found himself so crippled for want of adequate means to complete such an organization as was formed in other States, that he was compelled, in a great measure, to intrust the magistrates with the duties of local agents. Complaint has been made against this system by the freedmen in some localities. No doubt old prejudices, notions of slavery being the proper condition of the colored race, and perhaps ill-feeling at the result of the late contest, have caused some of these agents to use their power oppressively.

General Swayne has, in many cases, substituted officers of the army, who have been sent him for that purpose, in localities where complaints have been made. He has resorted to the establishment of bureau courts, temporarily, when he found it impossible to secure the freedman a fair and unprejudiced trial in any other way.

The vagrant laws of this State are oppressive. General Swayne says: "The vagrant law of Alabama operates most iniquitously upon the freedmen. In terms the law makes no distinction on account of color, but in practice the distinction is invariable. I am satisfied that the law would be annulled if fairly tested. I have taken up three cases under it by habeas corpus, but in every case the persons were discharged for informality in the commitment, without reaching the merits of the case."

In reference to the work performed in securing claims of soldiers, General Swayne reports: "Five hundred and sixteen applications passed through my office during the one month of August. There is reason to believe that this convenient and gratuitous assistance is almost indispensable to the parties in interest."

In regard to the privileges of the "homestead act," he also reports: "The freedmen have but little disposition to purchase government lands; the instances being frequent where they purchase that which is improved, several of them uniting often in the purchase of one tract for subdivision. The demand for labor leaves them but little inducement to set up for themselves when their wages are paid promptly. Eight (8) schools, thirty-one (31) teachers, and one thousand three hundred and thirty-eight (1,338) scholars are reported in this State. The education of the freedmen is progressing favorably, and in some parts of the State considerable interest is manifested by the better class of whites. The district officers report very decided progress in every feature of this work. There has been great and unabated zeal on the part of the pupils, and a corresponding progress in the acquirement of knowledge. Their success has favorably affected the minds of the whites towards them in the interests of education."

A greater number of rations have been issued to the white people of this State than to those of any other. The great destruction of property by our armies, the natural poverty of the northern part of the State, and the failure of the crops last year, can be assigned as the most important reasons for the large issues.

An order was sent, some time since, discontinuing the issue of all rations, except to those persons actually dependent and under the direct care of the bureau, as it was thought maturing crops would meet the wants of the people. The petition of General Swayne, Governor Patton, and many of the prominent



men of the State, caused me to continue such articles as were necessary to support life in the destitute districts.

In addition to other misfortunes of the poor whites and freedmen, the cotton and corn crops of this year are reported almost an entire failure. General Swayne reports:

"Since my return I have been carefully inquiring into the condition of affairs here, and find it the prevailing impression, that so general is the failure of the cotton crop that the yield will not exceed two hundred and fifty thousand bales, or not more than one-fourth of the crop of 1860.

"The corn crop has suffered even more severely, so that those counties which have heretofore been the granaries of the State will this year have none to spare, while the aggregate yield will not supply the State beyond the 1st of March next."

General Swayne further reports: "Some time ago I was inclined to close up the hospital department, but in the entire absence of poor-houses, or anything to take their place, it seems impossible to do so. At the hospital at this place, for instance, there are sixteen whites and sixty-seven colored persons who have nowhere else to go."

The poverty of the people is so great that it has been difficult to throw the care of the poor and indigent upon the local authorities.

From June 1, 1865, to September 1, 1866, (one year and three months,) the number of rations issued was as follows: Aggregate, 3,651,647—to whites, 2,522,907; to freedmen, 1,128,740; average rations per month, 243,843; average freedmen and refugees assisted daily, 8,128.

#### LOUISIANA.

Brevet Major General A. Baird was assigned to duty as assistant commissioner of this State in October, 1865, and ably discharged his duties until relieved, at his own request, about one month ago. During the last four months of his administration he performed the duties of district commander of Louisiana, in addition to those of assistant commissioner.

Major General P. H. Sheridan, department commander, has been temporarily performing the duty of assistant commissioner since the relief of General Baird.

In no other State have there arisen so many difficult questions with reference to labor, the status of the freedmen, and the power of military authorities. The assistant commissioner of the State has been able to give general satisfaction to the whites and freedmen, and aid in the restoration of law and order. Harmonious relations have existed between the State officials and bureau officers, which has materially aided the administration of the bureau. I am sorry to report a lack of hearty co-operation on the part of the municipal authorities of New Orleans with the plans of General Baird for the employment, protection, and education of the freedmen. Much that is to be regretted with reference to the present condition of colored people of New Orleans can be traced to this cause.

A large amount of abandoned property was held by the bureau officer during the year 1865, but was restored as rapidly as claimants could present proper proofs of ownership and loyalty. This property, consisting of large plantations and city property, furnished all the funds necessary to carry on the affairs of the bureau. As nearly all of this property was restored prior to January 1, 1866, this source of revenue has ceased. Taxes were levied for the support of schools during the administration of T. W. Conway as assistant commissioner, but at this time no taxes of any kind are imposed.

Bureau courts were abolished in Louisiana as soon as the legislature provided for the protection of the freedmen, with the understanding that officers were to retain the right of appearing in the courts in defence of the freedmen. In cases of manifest injustice by the civil authorities the assistant commissioner of the State retained the right to interfere, and, if necessary, organize a court composed

officers and citizens for the trial of offenders. The necessity for such courts has been urged by the freedmen on many occasions, yet the assistant commissioner has seldom interfered with the judicial officers of the State. Such action tended to increase the ill feeling of the whites, and in some districts, where no troops are stationed, it would be impossible to execute the orders of such courts. General Baird reports "that outrages upon freedmen reported from the distant parishes of the State remain uncorrected for want of adequate military force to make arrests. This condition of affairs can only be remedied by force. The perpetrators of the outrages are lawless and irresponsible men, the terror of property holders and laborers. They are countenanced by the community, either through sympathy or fear."

General Sheridan says: "Homicides are frequent in some localities; sometimes they are investigated by a coroner's jury, which justifies the act and releases the perpetrator; in other instances, when the proof comes to the knowledge of an agent of the bureau, the parties are held to bail in a nominal sum, for appearance at the next term of court, but the trial of a white man for the killing of a freedman can, in the existing state of society in this State, be nothing more or less than a farce."

I regret that the reports of officers of the bureau reveal such a bad state of society. It will be impossible for the military authorities to restore order and remedy the evils complained of by General Sheridan without an increase of the number of troops in the State.

Bureau officers have extended supervision over freedmen's contracts, and the result has been to the advantage of all.

General Sheridan says: "The time is fast approaching when the contracts for the present year will expire, and new bargains for the ensuing planting season must be made. In not a single instance where contracts have been made in accordance with the mode prescribed by the bureau has a complaint been made by either of the parties to the contract, while, on the other hand, when the bureau has been ignored, complaints by both employé and employer are frequent. The reason is obvious: both parties understand the contract when explained by the agent, and know that the influence of the bureau will be brought against the parties violating it, while in those contracts in which the bureau is ignored a majority of the bargains are vague and ill-defined, meaning anything or nothing; many are mere verbal agreements made without witness."

General Baird says: "The 'civil rights bill' has gone into operation in this State, and is having a good effect, restraining those who are disposed to set United States laws at defiance or to treat them with contempt. Several magistrates are under arrest for violating its provisions. The machinery for the execution of the law is yet in a very imperfect condition."

General Sheridan reports: "That the location of homesteads by the freedmen is progressing favorably, but it is a question whether they will be allowed to remain peaceably upon the lands selected." The agent for the location of homesteads reports depredations on the public lands, such as cutting timber, &c., by white citizens. Circumstances beyond the control of the bureau have greatly injured the once prosperous schools of this State. Enemies of the bureau and its officers have made a general attack upon the school administration. General Baird, being without money, was obliged to suspend all the public schools, promising that as soon as possible they should commence again. The colored people seeing their public schools closed did not abandon the education of their children, but opened a large number of private schools. A tax system was devised by which the people were to support their own education. For many reasons this tax became oppressive, and was never popular. The schools rapidly decreased, and a chaotic state ensued from which it took time to recover.

General Sheridan reports, under date of September 30, a great increase of

interest, and the prospect of flourishing schools this autumn and winter. The present number of schools is 73 ; teachers, 90 ; scholars, 3,389.

The number of irregular and private schools cannot at present be ascertained, but they are numerous.

General Sheridan reports that the total suspension of the issue of rations will cause much distress among the people that most need aid, viz, widows and families of soldiers killed in the army, and that the cotton and corn crop is nearly an entire failure in some parishes. He has found it impossible to induce the State authorities to provide for either white or black paupers.

The number of rations issued in this State from June 1, 1865, to September 1, 1866, (one year and three months,) was as follows : Aggregate, 612,788—to whites, 157,491 ; to freedmen, 455,290 ; average rations per month, 40,852 ; average freedmen and refugees assisted daily, 1,362.

#### TEXAS.

At the time of making my last annual report Brevet Brigadier General E. M. Gregory had just been assigned to duty as assistant commissioner of this State. He was relieved and placed on duty as one of the inspectors of the bureau by virtue of Special Orders No. 46, from this bureau, dated March 30, 1866.

Brevet Major General J. B. Kiddoo was assigned to duty as his successor. He was highly recommended by officers and civilians, and has managed his difficult work creditably.

The organization of the bureau has never been so extended in Texas as in other States, owing to its vast territory, scattered population, and the difficulty of travelling over large districts destitute of railroads. The army occupied a few of the largest cities, but this could give no protection for officers in the discharge of their duties in the interior. Military commanders have co-operated with the assistant commissioner and aided him in carrying out his orders. A portion of the State in the vicinity of Galveston, Austin, and Brownsville, is divided into districts, with competent officers in charge. The regulations of the assistant commissioner with reference to the offices of his assistants, their reports, general duties, &c, are complete, and in accordance with instructions from this office.

A reorganization of the State government has taken place, but the legislature has not yet passed all the necessary laws protecting the interests of freedmen. They are not allowed to testify in the courts in cases where they are interested, and in some other respects (for example, regarding the school fund,) distinctions are made between the whites and blacks.

Under the provisions of circulars issued from this office assistant commissioners retained control over all matters pertaining to freedmen, and organized courts, composed of officers, in all counties where the sentence of such courts could be executed. Less respect is paid to law and order in northeastern Texas than in other parts. The result of this unsettled state of affairs is seen in the numerous murders of whites and blacks reported. There seems to be but little security of life or of property in this portion of the State, and, although the best citizens may not approve of the crimes of the lawless, they are powerless to punish them. General Kiddoo reports, August 8 : "The greatest trouble I have in the administration of affairs of the bureau in this State consists in protecting the freedmen from lawless violence." \* \* \* Again, under date of August 20, he expresses the same opinion, and forwards reports of cases that have been examined by his officers in corroboration of his statements.

With the small number of troops in the State it is impossible for the assistant commissioner to afford protection to the freedmen in those districts where the greatest number of outrages are reported.

Freedmen contracted for the year's work under regulations prescribed by the

assistant commissioner, and have faithfully performed their labor. A majority preferred to take an interest in the crop for their compensation. The assistant commissioner has already made arrangements by which his officers can visit plantations in each district, and attend to the settlement of these accounts. Many of the planters in the wealthy districts, where a large number of freedmen are employed, acknowledge the aid rendered to the planting interests by the bureau. They say that a lack of confidence existed between the freedmen and the planters until the assistant commissioner inaugurated a system by which the freedmen could be employed and receive some security that their labor would be paid for. Officers of the bureau visited plantations and explained the duties and rights of employer and employé. The result has been good.

The general conduct of the Texas schools is prosperous. They have had but little assistance from the north. Thrown upon their own resources, they have become nearly self-supporting.

Two schools have been broken up and afterward re-established. The assistant commissioner complains of abuse by the newspapers of the lady teachers who are there engaged in this missionary work. Their schools now number ninety, with forty-three teachers and four thousand five hundred and ninety pupils.\*

There is a good report of the crop this year. The labor system of the State not having been broken up by the war, as in other parts of the south, the negro population passed more quietly from slavery to freedom, and continued to cultivate crops which sold for high prices. The freedmen remained, for the most part, at their old homes, and did not, by wandering about the country, become a charge upon the government from sickness and destitution. A very small number of rations has been issued to either whites or blacks. Little necessity has existed in this State for hospital or asylum support by the bureau.

During the fifteen months prior to September 1, 1866, the aggregate number of rations issued was thirteen thousand one hundred and seventy-five, (13,175,) as follows: to whites, three hundred and forty-nine, (349;) to freedmen, twelve thousand eight hundred and twenty-six, (12,826.) Average rations per month, eight hundred and seventy-nine, (879;) average number of freedmen and refugees assisted daily, twenty-nine, (29.)

#### MISSISSIPPI.

Colonel Samuel Thomas was assistant commissioner of this State from the organization of the bureau until May 1, 1866, when he was relieved by Major General Thomas J. Wood, commanding department.

The experiment of uniting the offices of assistant commissioner and military commander was first made in this State.

General Wood had manifested an interest in the welfare of the freedmen that induced me to place their affairs in this State in his hands. He has ably discharged the important and delicate duty of promoting their best interests. I am not aware of any ill effects having arisen from the union of offices referred to above in this State.

The State is divided into eight (8) districts, with an officer located at a central point in each. These officers have been selected for their special fitness for their work, and are highly spoken of by General Wood.

Each office is thoroughly organized, with proper blanks, books, and records. Officers have been instructed as to their duty, provided with complete files of orders and circulars, and are made strictly responsible to the assistant commissioner for their acts.

Most of the property held in Mississippi as abandoned was returned to the owners, and possession given January 1, 1866. Two plantations, belonging to Joseph E. Davis, were retained and leased to freedmen. These have been restored to Mr. Davis during the last month, subject to present leases.

Property was restored by Colonel Thomas, in accordance with instructions issued from this office, which also required him to provide for the aged and infirm freedmen, as well as to protect the interests of those who might have crops or property of any kind on the lands restored.

A sufficient amount of funds was obtained by Colonel Thomas from rent of abandoned property, and by the sale of products of government farms, to defray all expenses of the bureau in this State until July 1, 1866, when appropriations made by Congress became available for its support.

By directions from my office, careful attention was paid to the settling of accounts of freedmen against planters for their work during the year 1865, and every effort made to have all accounts equitably adjusted. On December 31, 1865, the entire regulation of labor was placed in the hands of the civil authorities, under the law passed by the legislature in the preceding November. Such laws as were in conflict with the spirit of the government, as the vagrant act, the law apprenticing orphans, and a portion of the labor laws, caused some suffering and much ill-feeling between local magistrates and bureau officers. Just and equal decisions were reported, and made known to the magistrates at large as precedents; interpretations and explanations of the intentions of these laws, of a liberal character, were obtained from the attorney general of the State and published, to modify the harsh action of State officials. The decision of the district judges, claiming for the freedmen protection for life and property, has exercised a beneficial effect. Officers of the bureau are admitted to the courts as the next friend of the freedmen, examine contracts, and explain to the freedmen their obligations and responsibilities.

I am sorry to report that one officer of this bureau has been killed in this State, and an attempt made on the life of another. Every effort has been made by General Wood to bring the perpetrators of these outrages to punishment, without success. The fear of a class of citizens calling themselves regulators, in some localities, is so great that peaceable citizens who are disposed to restore order and quiet are afraid to give the necessary information to secure the punishment of these men. General Wood's district officers complain that these regulators shoot freedmen without provocation, drive them from plantations without pay, and commit other crimes. So many outrages are reported of this nature that it is remarkable that the better portion of the community do not take more decided measures to secure the punishment of the guilty.

General Wood says: "The white people of this State have been educated and their habits formed under the influence of negro slavery. We shall not do them justice unless we remember that, with very few exceptions, they were fully persuaded that slavery was right and beneficial to the colored man, as it was profitable and pleasant to the ruling caste. They felt injured by emancipation; their profits and pride were assailed and destroyed. In the midst of the excitement, hurry, confusion, and active enmity of the times, nine-tenths of the people could not be expected to attribute the change to anything but a spirit of revenge. It was natural they should be more irritable under these circumstances. It was to be expected that the ignorant, violent, and unprincipled portion of these people, being additionally demoralized by the war, should give vent to the evil within them by committing outrages. On the other side, it can surprise no one that the freedmen should be somewhat unsettled, inclined to avoid labor, to which all their lives had been devoted under stern compulsion, and should misapprehend their rights and duties."

The excess of outrages in Mississippi is more apparent than real. We can never estimate evils prevented, unless we study the present situation in the light of history. What the condition of Mississippi would have been without the presence of the bureau cannot be learned in any other way. How many acts of violence, fraud, and oppression, how much idleness, theft, and perhaps insurrection, the bureau may have already prevented, can only be calculated in



comparison with Jamaica and other cases of insurrection recorded in history. Substantially the peace has been kept.

The commissioners under the civil rights bill have been appointed, and are acting in conjunction with the bureau officers.

General Wood has made an effort to gather information as to the quality and location of the public lands, which may be placed before the freedmen in such a way as to induce them to take advantage of the provisions of the act of Congress granting them homes. It is too early to report what success his efforts have had in this direction.

The sacredness of the marriage contract has been guarded by the officers, and the State officials compelled to afford the same safeguards to the colored people that protect this institution among the whites.

The reports on schools in this State show 50 schools, 80 teachers, and 5,407 pupils. In addition to this number of schools Rev. Jos. Warren, the State superintendent, says: "I have informal reports from ten plantations where there are schools; some of these are regular day schools for the children, with efforts made in the evening and on the Sabbath to aid the adults in learning. Poor accommodations have been furnished for the school-houses. The character of the teachers had been assailed, and in some instances in such a way as to injure their usefulness. Much opposition is still met in this State, while a few persons have been in favor of having the colored people taught."

The number of rations issued from June 1, 1865, to September 1, 1866, fifteen months, was four hundred and two thousand four hundred and twelve, (402,412)—to whites, forty-two thousand three hundred and fifteen, (42,315;) to freedmen, three hundred and sixty thousand and ninety-seven, (360,097.) Average rations per month, twenty-six thousand eight hundred and twenty-eight (26,828;) average number of freedmen and refugees assisted daily, eight hundred and ninety-five, (895.)

#### KENTUCKY AND TENNESSEE.

These States were under the control of Brevet Major General C. B. Fisk, as assistant commissioner, with headquarters at Nashville, till June 12, 1866, when Brevet Major General Jeff. C. Davis was assigned to duty as assistant commissioner and district commander of Kentucky, and General Fisk as district commander of troops in Tennessee, in addition to his duties as assistant commissioner.

#### TENNESSEE.

General Fisk having been mustered out of service September 1, Brevet Brigadier General J. R. Lewis was assigned to duty in his place.

General Fisk was successful in managing the affairs of the bureau under his charge. The legislature of the State of Tennessee has taken liberal action with reference to the rights of freedmen, and so modified the laws of the State that bureau courts have been abolished as no longer necessary. General Fisk, in transferring this important trust to the charge of officers elected by the people, took occasion to warn the authorities of the rights secured to freedmen by acts of Congress, and the necessity that civil officers should lay aside all feelings of prejudice, in order that the State laws might be administered in such a manner as not to compel a return to military courts.

The reports made to my office induce me to believe that greater security for the life and property of the freedmen now exists in this State than in many others.

As the time approaches for the settlement of contracts for labor of the freedmen on plantations, a desire is manifested on the part of many employers to avoid fulfilling their obligations. The testimony of both officers and citizens is clear



and positive as to the commendable manner in which the freedmen have labored. Measures will be taken by the assistant commissioner to secure as far as possible a proper adjustment of their accounts.

Nearly all the property held as "abandoned" has been restored in accordance with instructions from this office. Funds received for rents on such property have supported the organization and aided in building many school-houses, and otherwise advancing educational interests.

In this State there are forty-two (42) schools, one hundred and twenty-five (125) teachers, and nine thousand one hundred and fourteen (9,114) pupils. The accounts of the progress of education are of the most cheering nature, showing an increased interest in the schools on the part of the freedmen. Excepting at Memphis, the schools have not been interrupted during the last year. The bloody riot in May last caused a suspension of schools in this place. Immediate steps were taken to rebuild the houses burned and reorganize the schools.

Crops have not been injured in this State so much as further south. But little suffering has been reported among the poor whites and blacks, and as a consequence, the demand for supplies in the way of relief has not been great.

General Fisk was very fortunate in obtaining assistance for the poor of both classes from the local authorities. This aid has been extended in some localities so liberally as to do away with the necessity for hospitals or surgeons supported by the bureau.

#### KENTUCKY.

Reports from some parts of this State show an unfortunate condition of affairs. It was difficult to adopt any system for the action of bureau officers till the 10th of last December, when the honorable Secretary of State officially proclaimed slavery in the United States at an end.

Freedmen are generally industriously working, and but few complaints are made of their failure to appreciate their changed condition; but with reference to the feelings of the whites toward them, Brigadier General John Ely, inspector of the State, reports "that many cases have come to the notice of this office, showing that people who, under the old system of slavery had been in the habit of flogging and otherwise maltreating their slaves, seem to regard their right to continue to so use them as indisputable."

Great ill-feeling is manifested toward the officers of the bureau by a low class of people who have no interest in the welfare of the community in which they live. Bands of men calling themselves "regulators" have committed great outrages in some of the southeastern districts. Many of them have been arrested by officers of the bureau and held for trial under the provisions of General Order No. 44, from headquarters of the army of the United States. Many arrests have also been made by military officers under the civil rights bill, and the criminals brought before the United States circuit court. Laws relating to freedmen have not been so changed as to grant them the privileges secured by Congress; and in consequence of this, the assistant commissioner has been obliged to exercise all the powers granted him by the law organizing the bureau.

Thirty-five (35) schools, fifty-eight (58) teachers, and four thousand one hundred and twenty-two (4,122) pupils are reported. Most of the schools are taught by colored men and supported by subscriptions of the freed-people. Their progress has been slow, as but little assistance has been extended by the benevolent societies of the north.

Several schools have been broken up by bands of outlaws. In some instances the assistant commissioner has been compelled to send small detachments of troops to protect them.

With reference to the experiment of free labor, General Ely says: "Taken as an evidence that a properly paid free-labor system is a success, and that the

agents of this bureau have done something to add prosperity to the State, it is gratifying to hear, through the superintendents of this bureau, from every section of the State, of the flattering prospect of a larger yield this season than ever before, of corn, potatoes, and hemp."

A State law was passed last winter taxing all male negroes over the age of eighteen, one dollar per head, to be applied to the support of colored paupers. This tax has been collected, yet every effort of bureau officers to secure the support of paupers from the local authorities has been met with opposition. A large hospital is supported for the care of the sick, and rations issued to the following number of destitutes:

The number of rations issued from June 1, 1865, to September 1, 1866, one year and three months, was as follows: Aggregate, 518,102—to whites, 196,028; to freedmen, 322,074. Average monthly issue, 34,540; number of refugees and freedmen assisted daily, 1,152.

#### ARKANSAS.

General J. W. Sprague has been retained as assistant commissioner of this State, with authority to transact any necessary business of the bureau in Missouri. He has been successful in conducting affairs in that State, and has maintained harmonious relations with military commanders and State authorities. He has maintained a good district organization, with competent officers in charge, who have carried out the orders issued from this office and kept themselves fully posted as to their duties.

From the inspections lately made in the State, it would seem that the books of the various offices have been well kept; that the instructions of the assistant commissioner to his subordinates have been uniform and in accordance with the laws and regulations of the bureau.

The transfer of the administration of justice to the hands of State judicial officers is not yet completed, as the freedmen's rights have only been partially recognized by the legislature of the State.

Complaints are made by General Sprague that his officers find it impossible, when unsupported by troops, to carry out their instructions, or give the freedmen the protection from abuse that they should receive. He also reports the concentration of all troops in the State at three points.

The civil authorities have been invested with full power to secure order, protect peaceable citizens, and punish crimes in some localities, but have failed from some cause. General J. W. Sprague reports numerous crimes, including murders, committed throughout the State of Arkansas against freedmen, and the civil authorities almost universally neglect to take action or inflict punishment. For some reason there is an increase of crime reported in this State, and less quiet and order than existed six months ago. General J. W. Sprague says: "Since about the 1st of March last, crime against Union men and freedmen has been and is rapidly increasing. I might fill pages, giving accounts of thefts, robberies, assaults and murders, some of them of the most brutal and unprovoked character, where not a finger has been raised to bring the guilty parties to justice."

Freedmen are reported as working well and abiding by their contracts in good faith. Officers of the bureau retain control over the registration and supervision of the contract system, which is quite successful.

The report of the superintendent of education for Arkansas gives a very favorable account of the progress made. The freedmen labor under the disadvantages of poverty and the lack of proper buildings in which to hold schools. The northern aid societies have been fortunate in securing the confidence of freedmen and their employers. Everywhere there is eagerness to learn. More schools should be established, not only elementary, but those of higher grades, such as will suit the ambition of the pupils.

Number of schools in the State .....	30
Number of teachers in the State .....	28
Number of pupils in the State .....	1,584

The State authorities have taken no action with reference to the support of paupers of either color.

Two orphan asylums for colored children are supported by the Society of Friends. This society is spoken of in terms of highest praise by General Sprague.

The schools in Kansas are reported to the assistant commissioner of Arkansas. At this time there are fifteen (15) schools, twenty-four (24) teachers, and fifteen hundred (1,500) pupils. Great interest is manifested in these schools by the citizens of Kansas. They are very prosperous, and to a good degree self-supporting. Some of them receive aid from the Freedmen's Aid Commission.

In Missouri the State authorities propose to educate the freedmen, and the probability is that they will enter upon the work quite extensively during the coming season. The returns give thirty-eight (38) schools, forty-six (46) teachers, and two thousand six hundred and ninety-eight (2,698) pupils.

The number of rations issued from June 1, 1865, to September 1, 1866, was 1,705,055—to whites, 1,260,565; to freedmen, 444,490. Average rations per month, 113,670; average number of refugees and freedmen receiving assistance daily, 3,789.

#### MARYLAND.

The report for Maryland having been received after my report was finished, I introduce it substantially in the words of the assistant commissioner, Brevet Major General E. M. Gregory. It relates to several counties of Virginia and that part of Maryland not embraced within the jurisdiction of the assistant commissioner of the District of Columbia.

The affairs of the bureau previous to March 30, 1866, were superintended by Lieutenant Colonel Wm. P. Wilson.

At the time of General Stannard's assignment his district comprised the State of Maryland alone, but was further increased in June, 1866, by the addition of six counties of Virginia and two of West Virginia, which addition was constituted a sub-district, under the charge of Brevet Major J. H. Remington. The district thus increased has remained intact to date.

In compliance with letter from headquarters at Washington, dated June 12, 1866, officers stationed at local points were gradually recalled, and their duties are now discharged by inspectors from headquarters of the assistant commissioner, thereby doing away with the establishment of local offices.

The condition of the freedmen in the portion of Virginia and West Virginia included within this district, as shown by the report of General Stannard for months ending May and June, 1866, and the official records for succeeding months, has been generally satisfactory. No complaints of a serious nature were received, and, as a whole, the condition of the freedmen in the district above referred to is in marked contrast to their condition in portions of the State of Maryland, especially the seven lower counties, where much bad feeling exists, and frequent complaints are received of outrages and atrocities without parallel committed against freedmen. In many instances, where officers have been sent to investigate complaints in the counties mentioned, the complainants will make no charge, fearing personal injury from their oppressors so soon as the officer has left the vicinity. Up to September 1, fifty-one outrages have been reported to the assistant commissioner. These include cases of assault and battery, rape, murder, violations of civil rights law, illegal apprenticing, and others of a miscellaneous character.

## CONCLUDING REMARKS.

First. I recommend that the quartermaster, subsistence, and medical departments of the army be refunded the value of the transportation and stores issued by this bureau since its organization, from any funds appropriated to the bureau, the amount not to exceed six hundred thousand dollars.

Second. I recommend that the Commissioner be allowed to pay agents in charge of districts a monthly allowance not to exceed two hundred dollars per month, provided the number shall never exceed eight in each State where this bureau exists by law. This will enable the Commissioner to employ a higher class of agents than he can now at the price fixed by law.

Third. An inspection was made by Generals Steedman and Fullerton during the past year, and their reports widely circulated. Several officers of high character, whose record during the war was clear and commendable, deemed themselves deeply aggrieved by those reports. These officers have been tried by court-martial, but are now at home in arrest, awaiting sentence. My own views with regard to this inspection are set forth in detail in a letter that I sent to the war office in August last. I recommend that those officers who have been honorably acquitted be temporarily reassigned to duty in this bureau, that they may have an opportunity to relieve themselves of the stain sought to be cast upon them, and that all the proceedings in the trial be made as public as were the statements of their accusers.

Fourth. I have the honor to append my detailed estimate of the additional amount required for the expenditures of the bureau for the next fiscal year commencing July 1, 1867.

Salaries of assistant commissioners, sub-assistants, and agents...	\$147, 500
Salaries of clerks .....	82, 800
Stationery and printing.....	63, 000
Quarters and fuel.....	200, 000
Subsistence stores.....	1, 500, 000
Medical department .....	500, 000
Transportation .....	800, 000
School superintendents.....	25, 000
Buildings for schools and asylums, including construction, rental, and repairs .....	500, 000
Telegraphing and postage.....	18, 000
	<hr/>
	3, 836, 300
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In closing this report I take great pleasure in commending the fidelity and ability with which the officers, with few exceptions, have performed the delicate trusts committed to them. Their detailed reports will afford you a clearer view than this report of the manner in which they have discharged their duties.

Please accept from me my hearty thanks for your own generous counsel and unflagging interest in my work, which I assure you have given me no small support under the trying responsibilities the government has devolved upon me.

Very respectfully, your obedient servant,

O. O. HOWARD,  
*Major General, Commissioner.*

Hon. E. M. STANTON,  
*Secretary of War.*



*Officers and civilians under pay.*

States.	Officers.	Civilians.	Total.
Virginia.....	66	22	88
North Carolina.....	35	13	48
South Carolina.....	48	22	70
Georgia.....	24	18	42
Alabama.....	20	14	34
Florida.....	20	5	25
Tennessee.....	15	8	23
Kentucky.....	22	14	36
Mississippi.....	24	7	31
Arkansas.....	25	4	29
Louisiana.....	48	19	67
Texas.....	25	2	27
Maryland, District of Columbia, including Commissioner's office.....	34	62	96
Grand total.....	406	210	616

## APPENDIX.

[Circular.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
 FREEDMEN AND ABANDONED LANDS,  
*Jackson, Miss., November 11, 1865.*

It is constantly reported to the Commissioner and his agents that the freedmen have been deceived as to the intention of the government.

It is said that lands will be taken from the present holders and be divided among them next Christmas or New Years. This impression, wherever it exists, is wrong. All officers and agents of this bureau are hereby directed to take every possible means to remove so erroneous and injurious an impression. They will further endeavor to overcome other false reports that have been industriously spread abroad with a purpose to unsettle labor and give rise to disorder and suffering. Every proper means will be taken to secure fair, written agreements or contracts for the coming year; and the freedmen instructed that it is for their best interest to look to the property holders for employment. The Commissioner deprecates hostile action, and wishes every possible exertion made to produce kind feeling and mutual confidence between the blacks and the whites.

O. O. HOWARD,  
*Major General, Commissioner.*

[Circular No. 19.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
 FREEDMEN AND ABANDONED LANDS,  
*Washington, November 27, 1865.*

Paragraph II, Circular No. 8, current series, from this bureau, is so far modified as to allow the assistant commissioner of a State to draw, upon proper ration



returns, supplies for a month, according to his estimate, and have the stores sent to such sub-depots as he may designate, for issue in accordance with existing instructions.

O. O. HOWARD,  
*Major General, Commissioner.*

Approved :

A. B. EATON,  
*Commissary General, Subsistence.*

OFFICE COMMISSARY GENERAL SUBSISTENCE, Nov. 27, 1865.

[Circular No. 20.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, November 30, 1865.*

It is reported that in some cases, upon the restoration of lands and tenements, under orders from this bureau, refugees and freedmen have been summarily excluded from their homes by the owners of the lands. Hereafter officers and agents of the bureau will prevent everything of this kind, and sections 7 and 8 of Circular No. 15, current series, will not be construed as authorizing the restoration of lands and buildings, before complete and careful provision shall be made for the resident refugees and freedmen.

In all cases of doubt on this point, careful reports will be forwarded to this office, with the opinions of the assistant commissioners, based on the facts of the case, before any order of restoration is made.

O. O. HOWARD,  
*Major General, Commissioner.*

Approved :

E. M. STANTON,  
*Secretary of War.*

[Circular No. 21.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, December 11, 1865.*

• All officers and agents of the bureau, in addition to the monthly and quarterly returns of property and stores, required to be made direct to the chiefs of the different bureaus of the War Department, will mail or otherwise forward within ten (10) days after the expiration of each successive month, to the assistant commissioners, a complete monthly return of "stores pertaining to the Bureau of Refugees, Freedmen and Abandoned Lands," with abstracts and vouchers similar to forms 23 to 45 and 52 inclusive, regulations of the quartermaster's department. This return to embrace *all* stores and clothing belonging to the bureau, *i. e.*, purchased from the funds of the bureau, or received from any source other than the quartermaster's, subsistence, ordnance, and medical departments.

The revised army regulations will govern the transfer, issue, expenditure, loss, &c., of all property and stores belonging to the bureau.

Issues of clothing belonging to the bureau, when made to dependent refugees and freedmen, will be receipted for by them on a receipt roll similar to form 52, quartermaster's department, witnessed by a third party. These rolls are to be entered on voucher 42, (stores expended,) abstract L, of the monthly return, and filed therewith as a sub-voucher.

All accounts and vouchers are to be made in duplicate, one copy to be forwarded as above required, the other to be retained by the officer for his own protection. Two returns, form 23, will be forwarded, one with the abstracts and vouchers, one without them.

The assistant commissioners, on receipt of the monthly returns of stores, &c., after causing them to be examined, will, if made out in proper form, accompanied with the requisite vouchers, promptly transmit them to the Commissioner at Washington, otherwise return for correction.

Clothing and equipage received from the quartermaster's department for issue to dependent refugees and freedmen is to be accounted for to the Quartermaster General in the same manner as that issued to soldiers—that is, on form 51, with vouchers as per form 52.

When the recipient cannot write his name, his mark must be witnessed by a disinterested party.

All requisitions requiring the approval of the Commissioner are to be forwarded only on the first and fifteenth of each month, except in special cases.

O. O. HOWARD,  
*Major General, Commissioner.*

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[Circular No. 22.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, December 22, 1865.*

The attention of assistant commissioners is called to the report of the Lieutenant General, dated December 18, 1865. The most thorough inspection will at once be made, and the evils complained of corrected. No order from the War Department makes the bureau "independent of the military establishment," and agents should be furnished with complete instructions, according to the orders and circulars issued from this branch of the War Department.

Any agent or officer who presumes to act contrary to such instructions will be forthwith removed or reported to the department commander for trial by court-martial.

In all matters of a military character the officers and agents within a military department are under the direction of the department commander, in the same manner as an officer of engineers building a fort in the same department, who reports directly to the chief engineer.

Every assistant commissioner will constantly seek co-operation with the department commander, and must keep him furnished with all information in his possession. His formal approval must be secured, when possible, to all orders and circulars issued by the assistant commissioners.

O. O. HOWARD,  
*Major General, Commissioner.*

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[Circular Letter.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, February 23, 1866.*

Anticipating the excitement that will necessarily follow the action of the government with regard to the new freedmen's bill, you may feel somewhat embarrassed in the duties devolving upon you under the law and regulations already existing. That you may act steadily and firmly in any emergency, you

must be prepared for any increased hostility on the part of those who have so persistently hindered and troubled you and your agents, and, it may be, an increased restlessness among the freedmen.

The President has assured the Commissioner that he regards the present law as continuing the existence of the bureau at least a year from this time.

Please ascertain and report what steps have been taken in your district, by the State and municipal authorities, to provide for the absolutely indigent and suffering refugees and freedmen that have been and are being thrown upon the general government for support.

Continue to use every possible effort to find good homes for orphan minors who are dependent, and to reduce, by means of employment offices, any accumulations of people in the different cities and villages; aiding the unemployed to find homes and places of labor.

You have succeeded in allaying strife, settling labor, and promoting education in the midst of great difficulties. Continue with your utmost energy and ability to pursue the same course, so as to demonstrate to the people of your district the good intentions of the government, and the complete practicability of the system of free labor.

Give a thorough inspection of every agent for whom you are responsible.

Immoralities, corruption, neglected duty, and incapacity, are sometimes complained of, against officers and agents of this bureau. If either of these charges be sustained on investigation, the guilty agent will be at once removed, whether he can be replaced or not.

Thanking you heartily for the energy and fidelity you have thus far displayed, the Commissioner is pleased to express an unwavering confidence in your ability to cope with any new difficulties that may arise.

Very respectfully, your obedient servant,

O. O. HOWARD,  
*Major General, Commissioner.*

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[Circular.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, March 2, 1866.*

Attention is called to paragraph VIII, of Circular 5, series of 1865, from this office, with regard to marriages. The Commissioner deemed those regulations sufficient to enable the assistant commissioners to draw up more specific rules.

The Commissioner directs that each assistant commissioner consult the State laws with regard to the marriage and divorce of white persons, and embody them for the benefit of freedmen, so far as this can be done in a circular.

It is desirable to frame such a system of marriage rules as would be approved by the State authorities: it is therefore advisable to procure the formal approval of the governor to your circular on this subject.

The Commissioner would simply suggest several points that require immediate settlement:

1, parties eligible to marriage; 2, who shall grant certificates of marriage; 3, parties authorized to solemnize marriage; 4, dissolving marriages; 5, registry of marriages; 6, regulations with reference to persons who have lived together without marriage.

The greatest care must be taken to instruct all the freed people what the law demands of them in regard to marriage; and all clergymen and magistrates who are authorized to give certificates or solemnize marriage must be

The assistant commissioners will forward to these headquarters a copy of their regulations with reference to marriage as soon as they shall be drawn up, for file in this office.

**[Circular No. 2.]**

Hereafter transportation given to refugees and freedmen, under General Orders No. 138, War Department, Adjutant General's office, series of 1865, will not embrace able-bodied men and women, except in extreme cases, and to prevent actual suffering.

**This order will take effect at Washington, District of Columbia, on the 15th instant, and in each State at the date of receipt of the same by the assistant commissioner.**

**[Circular No. 3.]**

**All officers and agents of the bureau now, or who have been, responsible for public property, will prepare and forward to the chief quartermaster, on duty with the assistant commissioners, a statement made in accordance with forms herewith, A, B, and C, embracing all articles which have come into the possession of the officers from the organization of, or his connection with, the bureau to the 31st of March, 1866.**

These statements are to be consolidated by the chief quartermaster with their own, and forwarded, through the assistant commissioner, to the Commissioner at Washington without delay.

## A.

*Statement of property, quartermaster's department, from the organization of  
or connection of ————— with the bureau to the 31st of March, 1866.*

Articles.
Received from officers.
Purchased.
Manufactured.
Captured, gained, taken up.
Total.
Issued to dependent refugees.
Issued to dependent freedmen.
Transferred to officers.
Sold, died, lost, refunded.
Total.
On hand March 31, 1866.



The articles will be alphabetically arranged without reference to their classification.

Assistant commissioners will see that the above order is complied with.

O. O. HOWARD,  
*Major General, Commissioner.*

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[Circular No. 4 ]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, May 21, 1866.*

In order to answer numerous inquiries from officers, agents, and others, and if possible prevent misunderstandings with regard to the change of organization in this bureau, this circular is issued.

I. The Commissioner recommended, some time since, that the functions of military commander of a State and assistant commissioner be exercised by the same officer. Wherever practicable this is being effected, as in Virginia and Mississippi. It is not done in condemnation of the assistant commissioners, who have labored hard and successfully, but to secure more prompt and effective administration than can otherwise be done.

II. The Commissioner calls the attention of all officers officially to the reports in circulation as to acts of severity and cruelty toward the freedmen on their own part, as to carelessness in rendering their monthly accounts, and other offences. Every officer or agent already accused shall have the opportunity of a thorough vindication before a court-martial. But the occasions for such trials are to be deprecated, and they must be forestalled by a thorough system of inspection, and a prompt removal of every unfaithful officer.

III. Special attention is again called to the difficult duty of caring for the indigent. Where intense anxiety prevails to get rid of the bureau, surely State and county officers will make some arrangement to relieve the general government of this heavy expense. If the county officers or overseers of the poor will adopt the proper measures, the industrial and government farms, which are now so much complained of, can be dispensed with.

In order to meet an emergency, when the whole system of labor was deranged, the Commissioner urged the forming of joint companies, the encouragement of the immigration of those accustomed to free labor, so as to afford promptly as many examples as possible of the successful employment of negroes under a free system. Apparently in keeping with these regulations, a few officers have invested their own means, jointly with citizens, in the planting interest. I know of no law or regulation of the army or of this bureau against this, yet it will almost inevitably lead to corruption, as it has already to bitter accusation. Hereafter such investments, within their own jurisdiction, by officers on duty in this bureau, are strictly prohibited.

O. O. HOWARD,  
*Major General, Commissioner.*

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[Circular No. 5.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, May 23, 1866.*

In compliance with the accompanying circular from the War Department, assistant commissioners will, on Saturday of each week, forward to this office a



statement of the amount of funds belonging to this bureau held by each disbursing officer in their district, and report whether the same is in their hands deposited; and if deposited, state the depository.

[Circular.]

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,  
Washington, May 18, 1866.

Heads of bureaus will furnish weekly statements in duplicate, one to the Secretary of War, and one to the Secretary of the Treasury, of the amount of funds outstanding in the hands of disbursing officers, or on deposit, stating the names of the officers and the depositories where the funds are deposited.

By order of the Secretary of War :

E. D. TOWNSEND,  
*Assistant Adjutant General.*  
O. O. HOWARD,  
*Major General, Commissioner.*

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
Washington, June 12, 1866.

GENERAL: The following principles are clearly understood by the proper authorities, and should govern your action as assistant commissioner notwithstanding the recent military changes.

1. The assistant commissioner of a State, whether district military commander or not, will continue to report on bureau affairs directly to this office, as heretofore required by law, regulations, and orders. All medical and receiving and disbursing officers of this bureau will have their reports approved by the assistant commissioner and forward them in the same manner.

2. Duplicates of important reports will be furnished department and division commanders, provided they authorize, by detail or otherwise, a sufficient clerical force for this purpose.

3. You will forward monthly estimates of the number of rations needed to provide for the destitute, with such remarks as you may think necessary, in order to secure the government from imposition, and at the same time accomplish the objects of the bureau by preventing suffering.

The department commanders' approval is all that is required to secure the rations in advance of any action from this office.

Very respectfully,

O. O. HOWARD,  
*Major General, Commissioner.*

Brevet Major General R. K. SCOTT,  
*Assistant Commissioner State of South Carolina.*

[Indorsement.]

HEADQUARTERS ARMY UNITED STATES,  
July 9, 1866.

The Freedmen's Bureau being by law under the immediate direction of the War Department, and its officers and agents being subject only to the orders of the commissioners in matters pertaining to the bureau, they cannot be required to report on such matters to military commanders unless they are named in orders as agents of the bureau.

The within instructions of General Howard are therefore approved.

U. S. GRANT, *Lieutenant General.*

[Circular No. 6.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
Washington, June 22, 1866.

**I.** The attention of officers on duty in the Bureau of Refugees, Freedmen, and Abandoned Lands is particularly called to General Orders No. 39, War Department, Adjutant General's Office, June 19, 1866, publishing an act, approved June 14, 1866, "to regulate and secure the safe-keeping of public money intrusted to disbursing officers of the United States."

**II.** Disbursing officers of this bureau stationed "in places where there is no treasurer nor assistant treasurer of the United States," who deem it essential to the public interest that they be authorized to deposit the public money for which they are or may become responsible—or any portion thereof—"in any other public depository" or place of deposit, or to keep it in any other manner, will, on the receipt of this circular, report the facts and make application to this office, with a view to obtaining the authority necessary under the *proviso* to section 1 of said act.

The following list of assistant treasurers and depositaries is furnished from the Treasury Department for the government of all concerned :

*Treasurer, assistants, and depositaries.*

TREASURER OF THE UNITED STATES.

Francis E. Spinner..... Washington, District of Columbia.

ASSISTANT TREASURERS.

T. P. Chandler..... Boston, Massachusetts.  
H. H. Van Dyck..... New York, N. Y.  
N. B. Browne..... Philadelphia, Pennsylvania.  
A. G. Edwards..... St. Louis, Missouri.  
B. C. Pressley..... Charleston, South Carolina.  
T. P. May..... New Orleans, Louisiana.  
D. W. Cheesman..... San Francisco, California.  
G. W. Lane..... Denver City, Colorado.

UNITED STATES DEPOSITARIES.

O. D. Norton..... Buffalo, New York.  
E. H. Webster..... Baltimore, Maryland.  
Walter B. Scates..... Chicago, Illinois.  
R. H. Stephenson..... Cincinnati, Ohio.  
W. D. Gallagher..... Louisville, Kentucky.  
C. W. Batchelor..... Pittsburg, Pennsylvania.  
J. H. Stewart..... St Paul, Minnesota.  
Henry Warren ..... Oregon City, Omaha Territory.  
James L. Collins..... Santa Fé, New Mexico.  
J. Cushman..... Olympia, Washington Territory.  
John Kirkwood..... Little Rock, Arkansas.

O. O. HOWARD,  
*Major General, Commissioner.*

[General Orders No. 39.]

WAR DEPARTMENT, ADJUTANT GENERAL'S OFFICE,  
Washington, June 19, 1866.

The following act of Congress is published for the information and government of all concerned :

AN ACT to regulate and secure the safe-keeping of public money intrusted to disbursing officers of the United States.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That from and after the passage of this act it shall be the duty of every disbursing officer of the United States having any public money intrusted to him for disbursement to deposit the same with the Treasurer or some one of the assistant treasurers of the United States, and to draw for the same only as it may be required for payments to be made by him in pursuance of law ; and all transfers from the treasury of the United States to a disbursing officer shall be by draft or warrant on the treasury or an assistant treasurer of the United States : *Provided,* That in places where there is no treasurer nor assistant treasurer of the United States, the Secretary of the Treasury may, when he deems it essential to the public interest, specially authorize in writing the deposit of such public money in any other public depository, or in writing authorize the same to be kept in any other manner and under such rules and regulations as he may deem most safe and effectual to facilitate the payments to public creditors.

SEC. 2. *And be it further enacted,* That if any disbursing officer of the United States shall deposit any public money intrusted to him in any place or in any manner except as authorized by law, or shall convert to his own use in any way whatever, or shall loan, with or without interest, or shall for any purpose not prescribed by law withdraw from the Treasurer or any assistant treasurer, or any authorized depository, or shall for any purpose not prescribed by law transfer or apply any portion of the public money intrusted to him, every such act shall be deemed and adjudged an embezzlement of the money so deposited, converted, used, loaned, withdrawn, transferred, or applied, and every such act is hereby declared a felony, and upon conviction thereof shall be punished by imprisonment for a term not less than one year, nor more than ten years, or by fine not more than the amount embezzled nor less than one thousand dollars, or by both such fine and imprisonment, at the discretion of the court.

SEC. 3. *And be it further enacted,* That if any banker, broker, or any person, not an authorized depository of public money, shall knowingly receive from any disbursing officer, or collector of internal revenue, or other agent of the United States, any public money on deposit or by way of loan or accommodation, with or without interest, or otherwise than a payment of a debt against the United States ; or shall use, transfer, convert, appropriate or apply any portion of the public money for any purpose not prescribed by law ; or shall counsel, aid, or abet any disbursing officer or collector of internal revenue or other agent of the United States in so doing, every such act shall be deemed and adjudged an embezzlement of the moneys so deposited, loaned, transferred, used, converted, appropriated, or applied ; and any president, cashier, teller, director, or other officer of any bank or banking association who shall violate any of the provisions of this act shall be deemed and adjudged guilty of embezzlement of public money, and punishment as provided in section two of this act.

Approved June 14, 1866.

By order of the Secretary of War :

E. D. TOWNSEND,  
Assistant Adjutant General.

[Circular No. 7.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
- FREEDMEN AND ABANDONED LANDS,  
*Washington, July 2, 1866.*

The attention of the assistant commissioners of the States of Mississippi, Louisiana, Arkansas, and Florida is called to an act of Congress for the disposal of the public lands "for homestead actual settlement" in those States, approved by the President June 21, 1866.

By the provisions of this act freedmen and whites, who can take an oath that they have not borne arms against the United States, have the exclusive right, till January 1, 1867, of entering public lands in the following manner:

The applicant must make an affidavit that he is at the head of a family, or is twenty-one years of age, or shall have performed service in the army or navy of the United States, and that such application is for his exclusive use and benefit, and that said entry is made for the purpose of actual settlement and cultivation, and not either directly or indirectly for the use or benefit of any other person or persons whomsoever; and upon filing the said affidavit with register or receiver of public lands at the land office of the district in which the lands are located, and the payment of five dollars, the applicant can enter not more than eighty acres of land, and take immediate possession.

If, at the end of five years, the land has been held and cultivated by the applicant, a patent giving him full right and legal title to the land will be issued upon the payment of five dollars.

Assistant commissioners should make themselves familiar with all the provisions of this act intended to extend the privilege of securing homesteads from public lands to loyal whites and freedmen, giving them till January 1, 1867, special opportunities of obtaining homes by the mere act of settlement and payment of five dollars, secure from any interference likely to occur. Information of the location and quality of lands, the manner of entry, the advantage of this offer of the government, the increased security, and many reasons for companies of these people entering lands lying contiguous, should be collected and presented in the strongest manner.

Public lands can be entered at the following land offices, located in the States named: Alabama, Montgomery; Mississippi, Jackson; Louisiana, New Orleans; Arkansas, Little Rock, Washington, and Clarksville; Florida, Tallahassee.

O. O. HOWARD,  
*Major General, Commissioner.*

[Circular No. 8.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, July 5, 1866.*

In consideration of official information received of outrages committed upon the freedmen in some portions of Texas, of murder and crime against officers and freedmen in certain parts of Mississippi, Alabama, Georgia, and other late slave States, officers of this bureau are called upon to exercise unusual vigilance, and exert what power they can under present instructions to preserve the peace and good order of the districts for which they are held responsible; where the civil courts are in operation, receive the testimony of freedmen, and secure their rights. It is just what is wanted, and no effort must be spared to further the ends of justice through this instrumentality by a complete and active co-operation.

The recent changes in the organization of the bureau, making the military

commands and the bureau districts coincident, and under the same officers, will not, if properly understood, in any way weaken, but must strengthen, the hands of the responsible officers.

Special attention is called to paragraph 6 of Circular No. 5, from this bureau, approved by the President. This circular has never been countermanded nor modified, except with regard to the courts where the military tribunals have been suspended, or replaced by the civil and local courts in accordance with specific orders. And even in districts where this change has taken place the officer or agent must still be the friend of the freedman or refugee, to aid him in the protection of his case.

O. O. HOWARD,  
*Major General, Commissioner.*

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WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, July 9, 1866.*

*Assistant Commissioners of Alabama, Mississippi, Arkansas, Louisiana, and Florida:*

A circular has just been issued calling your attention to an act of Congress extending the provisions of the homestead law to the freedmen, and giving them an opportunity to enter lands, unopposed by any influence, till January 1, 1867.

The subject of this circular is of importance to the poor whites and freedmen under your charge, and, in order to secure your most earnest action in their behalf, I write this letter.

You are aware of the many advantages the western States have derived from this wise action of Congress; of the many thousands of poor people who have entered lands in this way, and laid the foundation of their individual fortunes, and, at the same time, built up prosperous and powerful States.

There is no reason why the poor whites and freedmen of the south cannot take advantage of the present homestead law, and enter a career of prosperity that will secure them fortunes, elevate them socially and morally, add to the general prosperity of the country, and settle the many vexed questions that are now arising. You should resort to every means in your power to spread the information this circular contains. You are empowered to employ a civil agent, in order to get a man of special fitness, if you shall find it necessary. Correct maps of all public lands in your district must be obtained immediately, and information as to the quality, location, &c., should be gathered and made known to the people interested. An officer or agent may be charged with the duty of answering all questions that may be asked by whites and blacks, besides corresponding with the register of public lands on all subjects connected with this matter.

Many ways of aiding the people in obtaining information and lands will suggest themselves to the assistant commissioner. It is the object of this letter to impress upon all officers of the bureau the importance of attending to this duty at once, to urge them to such action as will make the bureau an efficient agent in settling the public lands, and securing homes to the poor whites and blacks.

The commissioner directs that you report as soon as possible what steps you have taken, or propose, to carry into effect the settlements so much desired.

By order of Major General O. O. Howard:

SAMUEL THOMAS,  
*Brevet Brigadier General and A. A. G.*

[Circular No. 9.]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, July 17, 1866.*

I. The appropriation bill for this bureau for the fiscal year commencing July 1, 1866, having been approved by the President, assistant commissioners will cause their chief disbursing officers to forward, at once, estimates, in duplicate, properly approved, for sufficient funds to meet the expenses of the State or district under their charge for the month of July, 1866, (and arrearages,) and will hereafter make such estimates monthly.

II. The following are the specified objects for which money has been appropriated, and all estimates will be made and expenditures classified under these heads, viz:

Salaries of assistant and sub-assistant commissioners.

Salaries of clerks.

Stationery and printing.

Quarters and fuel.

Clothing for distribution.

Commissary stores.

Medical department.

Transportation.

School superintendents.

Repairs and rent of school-houses and asylums.

Telegraphing.

III. The money from which the expenses of the bureau for the past year have been paid, collected from miscellaneous sources, is now called the "refugees and freedmen's fund," to distinguish it from the appropriation of Congress.

IV. Assistant commissioners will cause their chief disbursing officers to forward, at once, by draft, to Brevet Colonel Geo. W. Balloch, chief disbursing officer at Washington, all moneys belonging to the refugees and freedmen's fund in their hands, or in the hands of any sub-agent, for which receipts will be sent.

V. All moneys received hereafter on account of the refugees and freedmen's fund, will, in like manner, be forwarded monthly to the chief disbursing officer at Washington.

VI. All sub-agents receiving money on account of the refugees and freedmen's fund will forward it to the assistant commissioner, or his chief disbursing officer, taking receipts in duplicate, as directed in paragraph 3, Circular 17, of 1865, one copy of which they will send direct to the Commissioner at Washington.

VII. Whenever assistant commissioners wish to make any expenditures that are not provided for under the heads enumerated in paragraph 2 of this circular, that should properly be paid out of the refugees and freedmen's fund, they will make a special estimate, in duplicate, for the amount needed, setting forth in detail the objects for which it is required.

VIII. Disbursing officers will hereafter make two distinct sets of financial accounts—one for all funds received, disbursed, or transferred, under the appropriation made by Congress; the other for all funds received, disbursed, or transferred, on account of the refugees and freedmen's fund; the account current and abstracts of the latter fund will be distinctly marked as such to prevent mistakes as to which fund they refer. Only one return for stores and property will be necessary, as heretofore.

IX. Quartermaster, commissary, and medical supplies will be drawn as heretofore, and will not be included in any estimates for funds, as arrangements will be made in Washington, with the heads of the respective bureaus, for the payment of all such accounts.



X. The general regulations laid down in Circular 17, of 1865, are still in force.

XI. It is important that all receiving and disbursing officers of this bureau should understand that accounts must be made with as great care, and that as much vigilance should be used in scrutinizing the manner of making out vouchers and other papers connected with financial matters, as for that of any other disbursing bureau.

O. O. HOWARD,  
*Major General, Commissioner.*

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, July 19, 1866.*

GENERAL: You will please furnish this office, at as early a date as possible, all the information you can gather with reference to lands subject to entry under the homestead law, that it may be transmitted to assistant commissioners of States not included in the act of Congress. The object in view is to place within the reach of all freedmen under the care of this bureau all the information necessary to enable them to secure the benefits of the act of Congress allowing them to enter lands.

Your communication should cover the following heads at least: the number of acres, its location, what counties, some information as to quality, whether bottom, swamp, hilly or upland, means of reaching it, and any other information that would be of assistance to parties entering the lands.

A copy of the homestead law is enclosed for your information; also instructions that were issued by the Department of the Interior to govern the entry of lands in the west. They contain information that will apply to the entry of lands in the south. A new circular will be issued from the General Land Office in a few days, and forwarded to you.

Very respectfully, your obedient servant,

O. O. HOWARD,  
*Major General, Commissioner.*

ASSISTANT COMMISSIONERS  
*Bureau Refugees, Freedmen and Abandoned Lands.*

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, August 17, 1866.*

GENERAL: I am directed by the Commissioner to invite your attention to section twelve of the late bureau act, and to call upon you for a full and accurate descriptive report of all property in your district included in its provisions, which will be forwarded without delay, in order that the necessary steps may be taken for the disposal of such property according to law.

Very respectfully, your obedient servant,

SAMUEL THOMAS,  
*Brevet Brigadier General and A. A. A. G.*

ASSISTANT COMMISSIONER  
*Bureau Refugees, Freedmen and Abandoned Lands.*

[Circular No. 10]

WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
Washington, August 22, 1866.

In accordance with the instructions of the Secretary of War it is ordered that on and after the 1st day of October next the issue of rations be discontinued, except to the sick in regularly organized hospitals, and to the orphan asylums for refugees and freedmen already existing, and that the State officials who may be responsible for the care of the poor be carefully notified of this order, so that they may assume the charge of such indigent refugees and freedmen as are not embraced in the above exceptions.

O. O. HOWARD,  
Major General, Commissioner.

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*Letter referred to by Commissioner in concluding remarks of report.*

WAR DEPARTMENT, BUREAU REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
Washington, D. C., August 23, 1866.

SIR: The following statements are respectfully submitted for your consideration:

The last report of Generals Steedman and Fullerton of an inspection of the bureau under my charge contains so many statements differing from those I have received from other inspecting officers and assistant commissioners, and furnishes deductions so widely varying from those I have formed and offered, that I deem it my duty to review the main points of this report; and more especially is this course necessary for me that I have been assigned to duty by yourself, and have administered the bureau in accordance with your instructions, verbal and written, keeping constantly in view a thorough and practical execution of the law by which my officers and myself have been bound.

The ostensible object of the inspection is to detect and correct abuses of administration and furnish yourself with information of the actual state of things. Had the inspectors made a thorough examination and report to yourself or to the Secretary of War, in accordance with their written instructions, so that I could have corrected the wrong-doings of individual agents, or modified any policy that was faulty, I would not complain, but be grateful for the aid and encouragement thus afforded. This method of inspection and report is the one that has always been pursued in the departments of the service with which I have been connected.

The inspectors have pursued an extraordinary course. I understood they took as clerks several newspaper reporters, who gave to the press the substance of their reports, and sometimes the reports themselves, before you had time to give them consideration. The effect of this course has been to concentrate the attention of the public upon certain individual acts of officers and agents, or accusations against them carelessly drawn, in such a way as to keep the faults committed, and not the good done, prominently in view.

Some things they have held up as criminal, which are not so in reality. Erroneous conclusions have been drawn from a state of affairs now existing in many places, for which the bureau is not responsible; *e. g.*, they charge to the account of the bureau all the evils of the labor system they find, while they attribute to the State governments and citizens, in great part, the good accomplished. Certainly this is the impression received from reading the reports.

In what I have to say I have no desire to screen any officer from just charges;

in fact, I have taken instant measures to bring to trial any officer against whom there seemed to be any well-founded accusation. It is a fact well worth considering here, that of thirteen assistant commissioners there has been but one whom the inspectors were able to condemn, viz, the assistant commissioner of North Carolina; and he, though held up to the country as a liar and a dishonest speculator, has been, I believe, acquitted by the decision of a fair and honorable court, so far as the charges were concerned.

Again, in the departments of Virginia and North Carolina, of over two hundred agents accusations were brought against ten only, seven officers and three civilians. The majority of them have been honorably acquitted of the charges preferred against them. The Rev. Mr. Fitz, of such terrible notoriety, who was having his case investigated on the arrival of the inspectors, proves to be not a reverend, but a young man of eighteen years, a quartermaster's clerk during the war, and personally guiltless of the cruelties imputed to his charge. All these cases will soon be officially reported. I need not refer to them further.

I may say, however, that the charge against an officer of putting men in a chain-gang had no foundation in fact, but in another part of the same State an officer specially selected by the inspectors for unqualified commendation had issued an order to place delinquents as vagrants in a chain-gang.

They give the number of officers in each State without command. I would say that I have made great efforts to reduce the number of military officers. I was partially influenced by this motive when I advocated the consolidation of the offices of assistant commissioner and military commander, deeming it worth a trial, as the business could be easily conducted by one head, provided the right kind of man could be placed in charge. The inspectors have indorsed this plan and given their testimony to the benefit derived from its operation.

Their final objection is to citizen agents, and in order to reduce expenses, they recommend that all such agents be discharged in the following language: "A great reduction in the expenses of the bureau, and a reform which would render it far less objectionable than it is now, would be effected by the discontinuance of all paid employes not in the military service of the government."

I assent to this principle, though the inspectors do not seem to do so, as they have given unqualified praise to the administration of the bureau in Georgia, where the greatest number of citizen agents are employed. Could I obtain details from the army I should certainly do so, but the smallness of the military force in most of the States has rendered it impossible.

They next speak of Georgia, saying, "that the amended laws of the State are fully as liberal as those of any northern State, and place the negro in all respects on a perfect equality with the white man as to his civil rights," conveying the impression that the freedmen are thoroughly protected under the execution of these laws.

General Tillson, who is highly commended by the inspectors, and is known to be a man of integrity and good judgment, in a late report to me says: "There are many instances where, through the prejudice of the people, or the incompetency of the magistrates, the freedmen are denied the protection of the law, and where the interference of the bureau is absolutely essential to secure justice. When this influence has been wisely directed, and the authority of the bureau brought to bear firmly but kindly, the happiest consequences have followed, not only protecting the freedmen in individual cases, but changing the tone and temper of the people, so as to prevent the recurrence of acts of injustice and oppression. The continuance and agency of the bureau is still a necessity."

The case of maladministration of Captain Louis J. Lambert is the only one mentioned among two hundred and seventy-three (273) agents. This will be thoroughly investigated by General Tillson. I am thankful for so great purity of administration in Georgia. I may say here, with reference to legal justice, that the policy pursued constantly has been to transfer jurisdiction to civil tri-

**unals** whenever there was a prospect of its impartial exercise under just laws; **n fact**, it has been the practice in most bureau courts to use the State laws when **o distinction** exists on account of color.

**No** fault is found with Alabama, except that a few officers are reported as **ngaged** in planting.

**The** inspectors must mean that these officers have invested some of their **ri-**  
**ate** funds in planting. All I can say is that a great many—in fact nearly all—  
**he** officers of the government have invested their funds in planting or some-  
**hing** else. If they have not prostituted their official position for private gain,  
**I** cannot complain, though I have lately forbidden such investments within the  
**imits** of official jurisdiction, in order to avoid even the appearance of evil.

**General** Wood, assistant commissioner of Mississippi, is commended for im-  
**proving** upon the administration of Colonel Samuel Thomas. The policy of  
**he** latter is declared not calculated to produce harmony between the races.

**In** this statement the inspectors have doubtless been misinformed, for I have  
**estimony** from General Wood and from inspectors that the policy pursued by  
**Colonel** Thomas has not been changed.

**They** next admit a state of affairs in Mississippi that demands some other  
**remedy** than the removal of the military force—that is, if freedmen and peace-  
**able** citizens are to be protected. The murder of a United States officer, and  
**the** firing upon others without cause, are admitted, and there is evidently a  
**reign** of terror in portions of the State.

**The** agent at Columbus, Major Smith, cannot be defended for telling large  
**stories** to the inspector.

**The** case of Chaplain Livermore is cited, but the fact that he was relieved  
**and** placed under arrest for his crimes as long ago as last February is credit-  
**able** to the administration of the assistant commissioner.

**The** agents at Columbus, long ago discharged, are suspected by the in-  
**spectors** of robbing. If they had taken pains to send me a single receipt from  
**any** man who had paid fees or fines, I could tell them at once whether these  
**gentlemen** were robbed or not.

#### LOUISIANA.

**The** inspectors complain of expenses, and recommend reduction. **They**  
**allege** that the main part of the money has been expended for schools. Had  
**they** inquired of General Baird he would have told them that as soon as the  
**taxes** were suspended by your order, the schools were closed, or continued as  
**private** enterprises, or by employers of freedmen under their contract stipu-  
**lations**.

**The** admirable system of education in New Orleans was established by mil-  
**itary** commanders long prior to the existence of the bureau. No facts have  
**been** presented to me to prove the statement that the money under Mr. Con-  
**way**, the late assistant commissioner, was squandered, as charged.

**The** corruption of a few officers under his administration may possibly be  
**true**; but whether so or not, it does not affect the present administration of  
**the** bureau in that State.

**It** is a little singular that the officers long ago relieved from duty should be  
**chosen** as exponents of the present management of the Freedmen's Bureau.

**The** report with reference to Texas rather commends than censures the ad-  
**ministration** in that State.

**One** officer, Captain Sloan, is condemned for perjury, and for his conduct in  
**office**. A subsequent examination of his case has furnished a more favorable  
**report**. The case will have a thorough investigation.

**Arkansas**, Kentucky, and Tennessee were not visited by the inspectors, and  
**it** is fair to suppose that the administration of the bureau in those States is as

it has been represented by the assistant commissioners and other officers and by reliable citizens.

It should be noticed, with regard to expenses, that aside from commissary quartermaster, and medical issues, the entire expenses of the freedmen's bureau have been defrayed, from its organization up to July last, without an appropriation, and without incurring a debt. The quartermaster, commissary, and medical issues were being made by the army proper when I took charge of the bureau, and have been reduced as much as possible, consistent with the pressing necessities of the people, whites and blacks.

I now come to by far the most important part of what the inspectors have to say—the summing up of their conclusions after four months' inspection of the bureau, in which they assert that "there is an entire absence of system or uniformity in its constitution." They have never asked me for a word of information with reference to records, reports, and orders.

They have made no examination of my office, and asked no reason for any action taken. The records or information they desired that could not be found in the offices of the south may be here. What would be the result if they should make a general inspection of the quartermaster, commissary, or other departments in the same way? Those officers who had been relieved, or were beyond their reach, are supposed to have made improper dispositions of all records or papers connected with their offices.

There is not a bureau in Washington with a more complete set of reports, books, and records, &c., than can be produced at this office for inspection at any time. They attempt to prove their assertion by the statement that in one State its officers exercised judicial powers; in one adjoining all cases are referred to civil authorities, while in a third State bureau officers collect the cases and turn them over to military courts. Their own inspection reports will refute this. In the States of Kentucky, Tennessee, Mississippi, Louisiana, Alabama, Florida, Virginia, and North Carolina, bureau agents do not exercise judicial powers of any kind, and in the other States the powers exercised by the officers of the bureau are modified by the feelings and conduct of the people toward the freedmen. They admit there is great difference in this feeling of whites toward the blacks. What other principle more uniform is it possible to adopt than to regulate the power of agents of the bureau by the disposition and conduct of the people, favoring them as they approximate equal justice?

It will be seen, by referring to the regulations from this bureau, Circular 5, series 65, approved by yourself, that a gradual transfer of jurisdiction was implied, and just as soon as practicable we have made trial of the civil courts in every State. I have sought the provost courts, as well as the civil, to relieve me of the exercise of judicial powers.

Bureau officers have never attempted to regulate wages, and no order ever existed making any regulations on the subject. Demand and supply controlled this matter. Of course wages, manner of payment, and all the questions entering into the labor subject differed widely throughout the south, and, from the nature of things, could not be uniform.

Although importuned from all parts of the south to take some action about wages, I steadily refused. The following has been the standing order for all the States: "No fixed rates of wages will be prescribed for a district; but, in order to regulate fair wages in individual cases, agents should have in mind minimum rates for their own guidance."

Assistant commissioners are required to furnish me with copies of all orders and circulars issued by them, and a close examination of all they have written on the subject fails to produce any attempt, upon their part, to regulate wages or contracts. The freedmen and employer have been left to manage the matter for themselves.

They say that schools in Louisiana have been supported by the government.



Their report shows, however, that they were supported by a military tax, and perhaps, to some extent, from the income from abandoned property.

They say that agents interfere in an arbitrary manner in favor of freedmen sometimes, and at others in favor of the planters. This is simply a crime according to bureau regulations, and the inspectors should have preferred charges against these officers that they might have been tried and punished.

It is true that the expenses of the bureau are not the same in all the States, as it is a plain proposition that the expenses must be regulated by the work to be done. As the necessity for bureau agencies differs according to the temper of the people, it is not singular that expenses should be apportioned accordingly. I am not aware that the bureau in any State was supported by funds from the United States treasury till after the late appropriation. In fact no funds had ever been drawn directly for the purpose of supporting the bureau organization till that appropriation was made by Congress.

They say that it was impossible to examine the accounts of bureau quartermasters, as they were compelled to take personal statements, &c., yet admit that they examined the accounts of General H. M. Whittlesey, of Mississippi, and found them all correct and complete. Of course his predecessor was entitled to his retained papers, and one complete set is on file in this office. They can find out how much money was collected from every legitimate and proper source in Mississippi by calling on me and asking for such information.

They say this system of receiving and disbursing money is loose. The same blanks, forms, reports and regulations as used in the quartermaster's department, have been adopted by this bureau as far as possible, and are as complete a check upon bureau officers in the discharge of their duties as is imposed upon officers of the quartermaster's department who originate and disburse funds.

They next refer to the case of Colonel Reno's report of the deficit of \$7,000, in Louisiana, and Lieutenant Foster, who is said to be a defaulter. It cannot be possible that General Fullerton, who, as one of the bureau officers, assisted in bringing this matter to light, can fail to remember that this subject has been undergoing an investigation for the last six months. The whole matter originated before the bureau was in existence, and has been brought to light and prosecuted by the assistant commissioner in order to fix the guilt upon the proper persons and secure their punishment.

It is not justice to the officers of the bureau to charge them with crimes that were committed against the freedmen in time prior to its organization, and to suppress dates and the location of grave charges so as to shift the responsibility upon those not guilty.

The inspectors next admit the necessity of the bureau last year, and acknowledge that it did much good for all classes. If this be true, it is bad logic to condemn the workings of the bureau for mistakes and errors that were committed last year, and more particularly for the year before its organization. Nearly every charge made against officers in this final report is for acts of last year, and upon which these officers have already been called to account by the bureau or the War Department.

I cannot agree with the inspectors altogether as to a complete revolution in the sentiment of the southern people which insures protection sufficient to the freedmen, when United States officers and freedmen are murdered, and the freedmen abused and mutilated, as is reported by the inspectors themselves.

They say the good feelings of the whites towards the blacks are owing to their interest in securing their labor. This I regard as insufficient security when trusted to absolutely without some other principle, *e. g.* the guarantee of equal laws. For years slaveholders have deemed compulsory measures the best security of labor.

The inspectors declare that "the bureau has been in the aggregate productive of more harm than good," and give as their reasons, substantially, the reliance



upon it of the negroes, and their consequent distrust of the property holder and the *provocation* of espionage creating mutual suspicion and bitterness.

I deny the whole statement. It is not founded upon fact, but upon theories constantly put forth by the enemies of good order. A few bad agents have been sent, and have doubtless done much harm, yet this bureau agency has been mediatorial and pacific as a whole. It has relieved this very suspicion and bitterness that existed when it was first organized. Riots, murders, and wicked deeds have recently sprung up, but these are in no way initiated or recognized by the officers of the government.

The inspectors charge the bureau with being responsible for the low wages paid freedmen under contracts on plantations. I shall refer to contracts again but will take up wages first. This bureau never regulated wages, but did urge all freedmen to labor on plantations and elsewhere, in order to relieve the government of their support, and to demonstrate to the country that they were not to become a shiftless, dependent race. The people north and south, as well as an evident necessity, demanded that the freedmen should go to work at the beginning of the year. My officers entered the field and urged the freedmen to take this course—providing for themselves. You are fully aware that at this time planters in different parts of the south formed combinations against high wages, some counties fixing as low a rate as five dollars per month for the able bodied. The bureau officers urged that the standard be placed as high as possible, yet they could not compel a higher rate of compensation. What were the freedmen to do? If they failed to contract they incurred the odium of being a "lazy, idle, and worthless race," besides running the risk of starving. They went to work on plantations at the highest wages they could get. As soon as planters began to find that labor would be scarce, that the freedmen were going to work, they saw that their interest was to secure laborers for their cotton fields before it was too late and offered higher rates. Nothing could be more natural. Yet it is not difficult to see that the planters of the south who represented the capital were associated against labor, and compelled low wages. Bureau officers did all in their power to get the highest wages possible for the freedmen, but as the Georgia railroads and Mississippi steamboats would not and could not give \$1 50 per day for all the plantation laborers last January and February, when they were compelled to seek employment, the freedmen were forced to go to work at the planters rates. Yet we find these inspectors complaining about the present wages, and advising a transfer of the interests of laborers to the men who by firmly resisting an advance kept wages where they now are. They say, "In all the large towns of Mississippi planters were offering one dollar per day in May and June, while, under the sanction of the government, thousands of freedmen were working for ten dollars per month." I do not doubt this. Yet the planters and the other employers, not the officers of the bureau, are responsible for compelling laborers to accept the ten-dollar terms last January or starve. Now that the planters' crop is near the gathering, and the cotton-fields need severe and unremitting labor, no doubt they are willing to give one dollar per diem for a few laborers to finish up the work. They say their contracts were sanctioned by bureau officers. This may be so. Bureau officers could not have done otherwise. If they had they would have been accused of defeating the objects of the bureau law, and would have introduced a principle which impairs the very nature of a contract. All the arguments of the inspectors fall to the ground unless they can prove that the freedmen could have obtained from property-holders without compulsion \$1 50 per day last January, when necessity compelled them to go to work.

The principles that apply to wages induced the present contract system. I would have been glad to have adopted precisely the same methods of regulating labor as obtained in the northern States, but neither the planters nor the freedmen were yet prepared for this.

Planters complained that freedmen under a free system of labor would not work till the crop was saved, but would remain only till they obtained money to keep them a short time, and then desert the crops at a most critical period. Nearly every southern State has provided laws by which the freedmen are to be contracted with for one year. Planters refused to employ freedmen at all unless they would agree to remain one year. Of course freedmen were driven into those obligations by the same force that compelled them to work for low wages. Any one who will remember the current news of the day, as reported during the months of last January and February, will remember that all the power that capital can exercise was brought to bear upon the laborers of the south to make them contract.

I claim, and the facts will prove it, that the bureau has labored successfully to elevate wages, and defended the interests of the freedmen in their contracts; being constantly resisted by the inertia of the peculiar opinions of southern property-holders. The evils in the contracts will disappear just as soon as free labor shall have a permanent foothold under its necessary protection of equal laws properly executed.

From the course pursued by the inspectors, I suspect the object of the inspection, as they understood it, was to bring the Freedmen's Bureau into contempt before the country, and, to do this they have endeavored to prove mal administration.

On the contrary, I am prepared to prove to yourself or any other candid mind that I have fulfilled the trust you committed to me with care, conscientiousness, and faithfulness; I have obeyed your orders and instructions, making no other objections than those I have made to yourself and the Secretary of War; that my system has been a thorough one, and as complete and uniform as was possible in an institution intended to be temporary and to meet a transient necessity. Could the Freedmen's Bureau be now administered with your full and hearty sanction, and with the co-operation of the other branches of the government, it would fulfil the objects of its creation in a short time, and be made, while it existed, to conduce to industry, enlightenment, and justice for all classes of the people. The work committed to it may doubtless be done by the army, without a bureau, but not with much less expense. Yet, if the government would keep good faith with its new-made citizens, some sort of a United States agency must be maintained in the southern States until society shall have become more settled than it now is.

Very respectfully, your obedient servant,

O. O. HOWARD,  
*Major General, Commissioner.*

His Excellency ANDREW JOHNSON,  
*President of the United States.*

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WAR DEPARTMENT, BUREAU OF REFUGEES,  
FREEDMEN AND ABANDONED LANDS,  
*Washington, September 28, 1866.*

SIR: Having received a copy of Governor Patton's letter to the President dated September 13, 1866, soliciting a suspension of Circular No. 10 from this bureau, and representing that the actual sufferers in Alabama, from want of food, are from "seventy to eighty thousand, the larger portion of whom are widows and orphans," and that "three-fourths of this number are absolutely dependent upon government or charitable contributions for subsistence," and representing, further, a depleted State treasury and an embarrassed credit, and having in addition to these representations received several earnest recommendations from Major General Swayne, assistant commissioner, to the same effect, I recom-

mend that special relief be furnished from the appropriation for that purpose not to exceed forty thousand dollars per month, for the period of three months.

It is proper to notice that in Alabama, according to the last report, there were more than two whites aided with rations to one colored person.

Very respectfully,

O. O. HOWARD,  
*Major General, Commissioner.*

Hon. E. M. STANTON,  
*Secretary of War.*

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WAR DEPARTMENT, *September 28, 1866.*

In view of the foregoing statements, the order of 23d August, stopping the issue of supplies, is modified, so as to allow the issue of corn and bacon, as requested by Governor Patton, for the period and quantities above mentioned, in the State of Alabama.

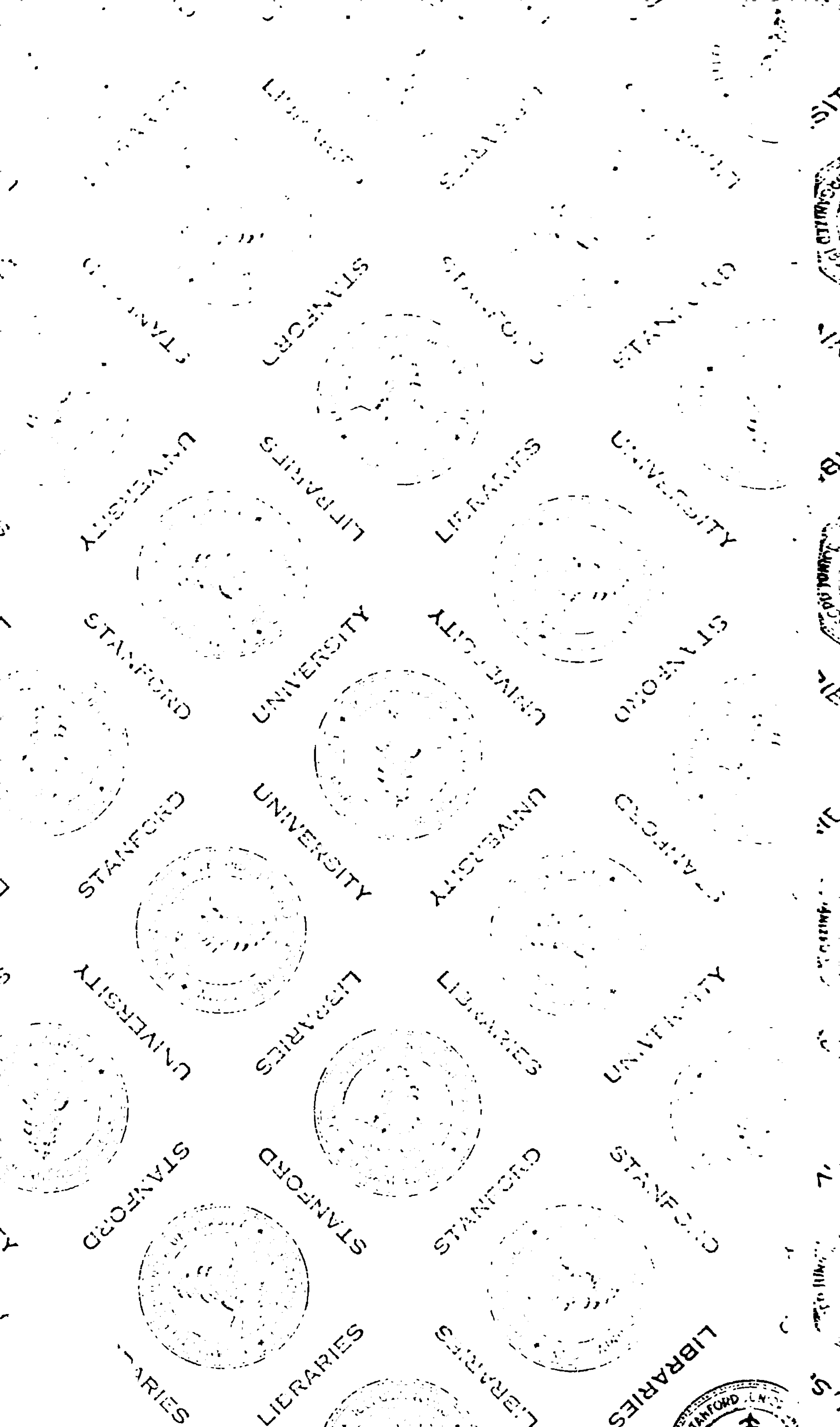
EDWIN M. STANTON,  
*Secretary of War.*











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